amateur radio

SEE STORY ON PAGE 9

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Vol. 36, No. 9
SEPTEMBER
1968

30c

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MODEL K142

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Peak-to-peak (in 7 ranges): 0-4v., 0-14v., 0-40v., 0-140v., 0-400v., 0-1400v., 0-4000v.
Output (dBm): Minus 2 dB to plus 65 dB (in 7 ranges) (0 dB equals 1 mW. in 600 ohm line): minus 20 to plus 5/16/25/36/45/56/65 dB.
Input Impedance: 1.4 megohms.
Input Capacitance: 30 pF. or below (1.5/5/15/50 150v. range), 15 pF. or below (500/1500 range).
Accuracy: Within plus or minus 5% full scale.
Freq. Response: 30 c/s.-500 Kc. within plus or minus 3%; 20 c/s.-10 Mc. within plus or minus 10%.

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Measurement Range (in 7 ranges): 0-1.5v., 0-5v., 0-15v., 0-50v., 0-150v., 0-500v., 0-1500v.
Input Impedance: 11 megohms, 2 pF. or below (using "D.C." Probe).
Accuracy: Within plus or minus 2% full scale.

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20,000 ohms per volt d.c., 8,000 ohms per volt a.c.

Specifications:

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1 amp. D.C.	$4.50
5 amp. D.C.	$4.50
10 amp. D.C.	$4.50
30-0-30 amp. D.C.	$5.25
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"AMATEUR RADIO"

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA FOUNDED 1910

SEPTEMBER 1968
Vol. 36, No. 9

CONTENTS

W.I.A. OFFICIAL BROADCASTS

NEW SOUTH WALES

VK2WI, Sundays, at 1100 hours E.A.S.T.
3595 Kc. a.m. 146.130 Mc. a.m.
7146 Kc. a.m. 146.000 Mc. f.m.
53.666 Mc. a.m. (53.550 Mc. f.m. proposed shortly)

VICTORIA

VK3WI, Sundays, at 1030 hours E.A.S.T.
1825 Kc. a.m. 144.500 Mc. a.m.
3600 Kc. s.s.b. 145.854 Mc. f.m.
7148 Kc. a.m. 432.500 Mc. a.m.
53.032 Mc. a.m.

QUEENSLAND

VK4WI, Sundays, at 0900 hours E.A.S.T.
3580 Kc. 53.995 Mc.
7146 Kc. 144.36 Mc.
14.342 Mc.

SOUTH AUSTRALIA

VK5WI, Sundays, at 0900 hours C.A.S.T.
3.5, 14, 52 and 144 Mc. bands.

WESTERN AUSTRALIA

VK6WI, Sundays, at 0930 hours W.A.S.T.
3.655 Mc. s.s.b. 52.656 Mc. F3
7.080 Mc. a.m. 52.4 Mc. a.m.
14.100 Mc. s.s.b. 144.36 Mc. a.m.

TASMANIA

VK7WI, Sundays, at 1000 hours E.A.S.T.
3672 Kc., and re-transmitted by representative stations on—
7146 Kc. 144.1 Mc.
53.632 Mc. 432.8 Mc.

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- ★ Power Supply built in, 230v. 50 cycles AC (no extra charge!).
- ★ Selectable USB/LSB, CW and AM, normal or break-in keying.
- ★ Carrier input adjustable for safe tune up.
- ★ PA uses pair of new heavy duty pentodes, type 6KD6, 33 watt plate dissipation.
- ★ VOX is included, as well as PTT and panel control.
- ★ 100 kc. and 25 kc. dual calibrator.
- ★ Sidetone CW monitor.
- ★ Multi-scale panel meter, fully calibrated, provides direct reading of PA current, plus relative power output, ALC indication, Rx "S" units.
- ★ Offset tuning, plus or minus 5 kc. is provided by clarifier control, which is selectable Off, Rx, Rx and Tx.
- ★ VFO dial readout of 1 kc.
- ★ Dial forward reading all bands.
- ★ Provision for external VFO for split frequency operation, plus built-in four crystal locked channel facility.
- ★ Adjustable VFO tuning knob tension.
- ★ Fast and slow selectable receiver AGC.
- ★ All plugs, circuit and instruction manual provided.
- ★ PTT microphone included—free.
- ★ Superbly neat construction, very accessible for servicing.
- ★ Solid, charcoal blue cabinet with lift-off lid, 15¾ x 6¼ x 13¾ inches. Matt finish aluminium panel.
- ★ 18 valves, 9 transistors and 33 diodes.

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A Table Top S.S.B. Transceiver for Six Metres

A. S. LUNDY, VK2ASI*

HAVING built a much transistorised copy of the Swan 240 for use as a mobile rig and found it an ideal layout to "home brew," it was decided to try a 6 metre version along the same lines. As the unit would be used almost exclusively for working sporadic E openings, high power and performance was not really necessary, hence the use of a 2E26 final and a valve receiver front end. The performance nevertheless is quite adequate, with at least 30 watts p.e.p. output and a receiver that will hear 0.2 microvolt above the noise. The output level is ideal for driving an "afterburner" and a FET pre-amplifier would no doubt improve the receiver to match.

CHASSIS CONSTRUCTION

The chassis was formed from 16g. half hard aluminium sheet (Fig. 1). Pop rivets were used wherever possible and self tapping screws elsewhere. Some form of chassis bender is needed, if only a large vyce and some pieces of angle iron. All bends are made in the same direction. A matt finish can be obtained on the chassis by etching in 5% sodium hydroxide for about 5 minutes. This also removes most of the marks and scratches that invariably appear after the cutting and bending work. Ventilation holes are drilled around each valve socket, 6 holes round the 7-pin and 8 holes around the 9-pin with a double row around the 2E26 socket.

The tuning drive mechanism is a copy of the Swan 350 arrangement and consists of two 6 to 1 Jackson verniers, 1 brass spacer and the spun aluminium course tuning knob and the outer bakelite fine tuning knob. This assembly is available from Ham Radio Suppliers of Melbourne. The first vernier is attached to the v.f.o. box wall and the second vernier to the front panel with the brass spacer between it and the panel.

The bottom cover has a pattern of 3/16" holes drilled in it at 1" centres to provide ventilation, while the top cover has a similar pattern at ¾" centres over the p.a. box. There is also a gap of ¼" between the top of the front panel and the underside of the top cover, also for ventilation purposes.

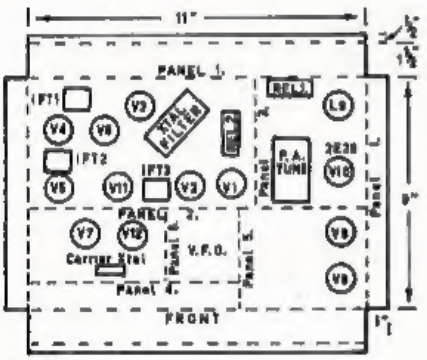

FIG. 1. CHASSIS LAYOUT.

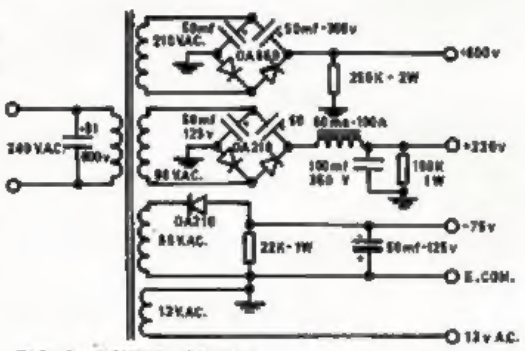

FIG. 3. POWER SUPPLY

RECEIVER CIRCUIT

The receiver front end consists of a pair of 6AK5s as r.f. stage and mixer. Output from the mixer is coupled through IFT3 into the 6.4 Mc. crystal filter. The 250 pF. and 470 pF. capacitive dividers provide low impedance into the filter. The filter was constructed from FT243 surplus crystals using the sweep unit described in December 1967 "A.R.," page 10. The filter crystals are mounted on a piece of matrix board, three holes wide by seven holes long, and the whole unit then supported on two ¼" bolts.

6.4 Mc. was the highest frequency that a quantity of surplus crystals were available in and this, combined with the fact of no harmonics in the 6 metre band and a reasonable conversion ratio to 6 metres, led to the choice of this frequency. The author can supply a limited number of filter units, aligned and mounted at $7 each for those who do not wish to construct their own.

Output from the filter goes to the 1st i.f. amp., then is capacitively coupled out of IFT1 to the second i.f. stage. The cathodes of these two stages and the 6AK5 r.f. stage are tied together through the r.f. gain control. A.g.c. is applied to the r.f. stage and second i.f. stage. One half of a 12AT7 is the product detector, the other half serves as the first audio. A pair of OA91 diodes as a voltage doubler provide the audio-derived a.g.c. voltage. The audio output is provided by a 12AQ5 which is only coasting along but still provides all the audio required.

HETERODYNE V.F.O.

The v.f.o. runs at 10.6 to 11.1 Mc. and after passing through an emitter follower isolation stage is mixed with 35 Mc. energy from an overtone crystal oscillator to give an output of 45.6 to 46.1 Mc. which, when mixed with the incoming 52.0 to 52.5 Mc. signals, produces the 6.4 Mc. i.f. frequency.

Crystals on 34.5 Mc. and 36.0 Mc. can also be switched in so as to give a tuning range from 51.5 to 53.5 Mc. in segments of 500 Kc. This arrangement gives a constant tuning rate per segment and adequate stability.

Output from the v.f.o. mixer is passed through three tuned circuits to the grid of the 12BA6 v.f.o. amplifier. The four tuned circuits (L16, L17, L18 and L19) are adjusted so as to provide a bandpass between 45 Mc. and 47 Mc. This adjustment is easily done by disabling the v.f.o. oscillator by removing the 33 pF. coupling capacitor to the tuned circuit, coupling a signal generator to the base of the emitter follower with a 100 pF. capacitor, and detecting output in the 12BA6 v.f.o. amplifier plate circuit by means of a 2-turn link, a OA91 diode and a 50 or 100 microampere meter.

Remove the overtone crystals so as to disable the overtone oscillator, then slowly tune the signal generater across the 45-47 Mc. range. Adjust the four tuned circuits to get a suitable bandpass, which should come out with quite steep sides and only a 3 db. hole in the middle. It is surprising just how effective this simple arrangement is.

The complete v.f.o., overtone oscillator and mixer are mounted on matrix board, 7 holes wide and 5 inches long. L17 and L18 mount on a small additional piece attached to the front side with Araldite.

The v.f.o. coils, L13 and L14, are mounted in the v.f.o. box alongside the tuning capacitor.

The former for L13 is a threaded bakelite one from the crystal oscillator section in the SCR522 units. The variable inductance, L14, is used for bandsetting and is wound on a 7 mm. slug tuned former with ¾" square base. The same formers are used in the three i.f. transformers also, and are available from the W.I.A. N.S.W. Division, as are the 0.5-6 pF. v.h.f. trimmers used throughout the transceiver and the 25 pF. polar tuning capacitors.

As crystal locked transmitters seem to still be in the majority on 6 metres, it was necessary to include a function which allowed one to call CQ, then tune the band, so a crystal oscillator was incorporated which could, if desired, be used to lock the transmit frequency, while the v.f.o. was used to tune the receiver. This function is controlled by a front panel switch SW2 and relay No. 2.

When the switch is on "transceive" position, operation is on the one frequency. When on "crystal" position the transmitter is crystal locked while one tunes the receiver with the v.f.o. The frequency of the crystal lies between 10.6 Mc. and 11.1 Mc., the same as the v.f.o. it replaces. It would be possible to use an overtone crystal between 45.6 Mc. and 47.1 Mc. instead

* 36 Otho Street, Inverell, N.S.W., 2360.

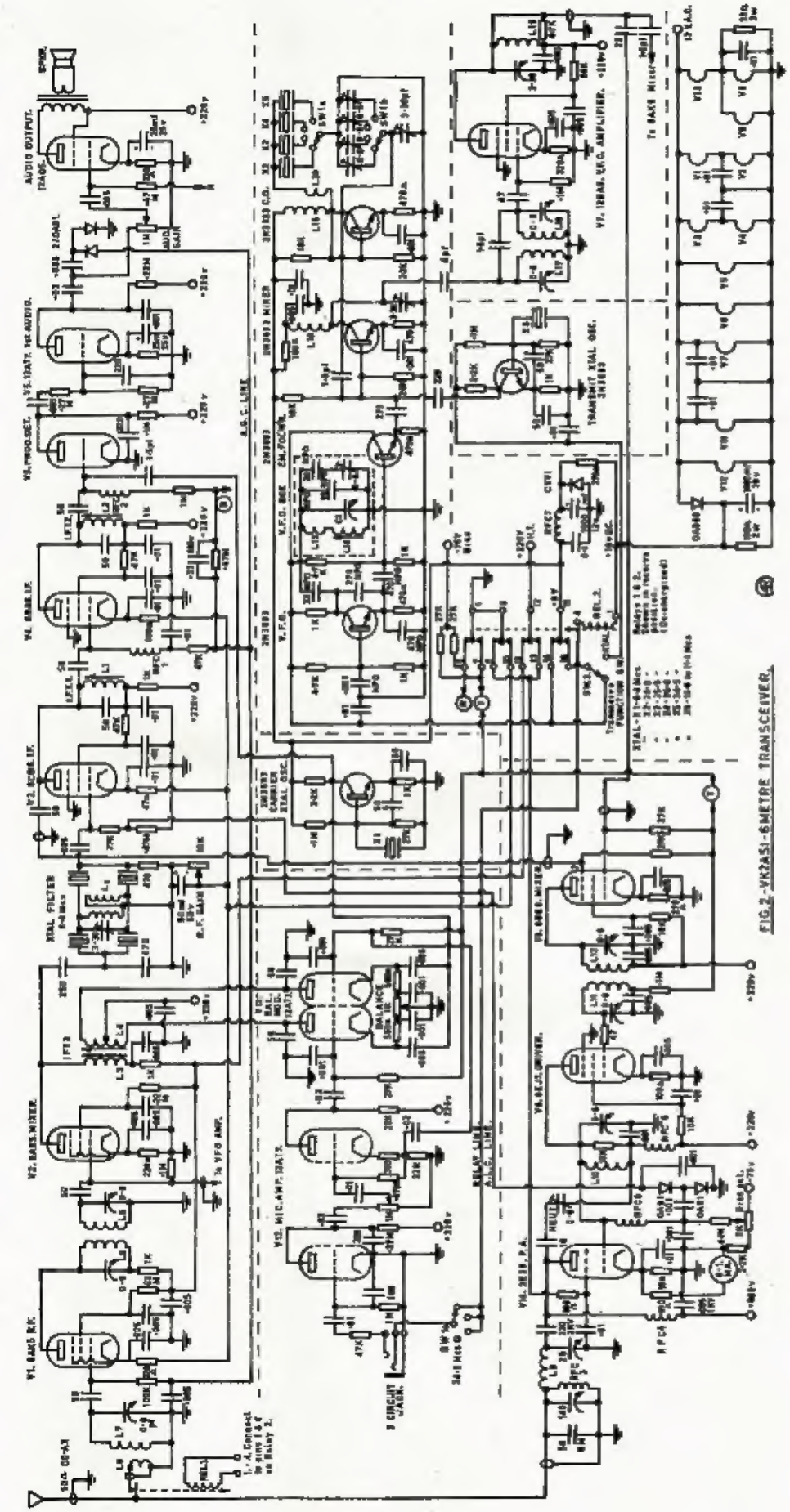

FIG.2-VK2ASI-6METRE TRANSCEIVER.

of the whole v.f.o. assembly, but the use of the lower crystal has some advantages, namely:

(1) A cheaper crystal.
(2) An overtone crystal would require a tuned circuit and feedback link.
(3) Three crystal locked positions are available from one crystal, i.e. if one used a crystal on 10.7 Mc. then one could operate on 52.1, 52.6 or 53.1 Mc., depending on which 500 Kc. segment was selected.

Inadvertant transmitter operation in the 51.5 to 52.0 Mc. range is avoided by means of switch 1C which disables the push to talk circuit when this segment is selected.

The 0.5 to 6 pF. trimmer and the 20 pF. N750 capacitor provide negative temperature co-efficient to enable drift in the v.f.o., due to temperature rise, to be compensated for. The prototype unit required the full amount and now has less "driftitis" than a lot of the crystal locked transmitters on this band.

Front panel controls are from the left: 1, audio gain; 2, r.f. gain; 3, band selector Sw.1; 4, microphone socket; 5, microphone gain; 6, balanced modulator control; 7, p.a. bias; 8, crystal-transceive function switch. The p.a. tune and load controls are alongside the cathode current meter, which is a MR2P type. The black pointer knobs are available from the W.I.A. N.S.W. Division Equipment Store.

All components were mounted on miniature tag strips around the relative valve sockets, the coils were also mounted in this manner, while the 0.5-6 pF. v.h.f. trimmers were mounted through ¼" holes with a self tapping screw so that they could be adjusted from the top side of the chassis.

The v.f.o. tuning capacitor is a Polar single gang type C18-02 of 25 pF. Plates are removed from it so that only four stator and four rotor plates are left.

TRANSMITTER

Audio from a high impedance microphone goes to one half of a 12AT7, then to the other half which is a phase-splitter and provides push-pull audio to the grids of a second 12AT7 which serves as a balanced modulator. Originally a 7360 beam deflector valve was contemplated here but as they are $5 and VK2ASI has plenty of five for $2 12AT7s around, the latter were tried and found to be completely satisfactory. R.f. in parallel from the carrier crystal oscillator is applied to the 12AT7 cathodes and balance achieved by means of a variable cathode resistor.

The double sideband output is coupled into the crystal filter through IFT3 and is amplified by the 6CB6 first i.f. stage. The second i.f. stage, product detector and audio output stages are disabled by the application of —75 volts to their control grids. S.s.b. output from the first i.f. stage goes to the injection grid of the 6BE6 mixer, while output from the heterodyne v.f.o. goes to the control grid.

Some doubt was entertained as to the effectiveness of a 6BE6 at 52 Mc., so

a 6AG5 was tried instead at one stage, but was soon changed back to the 6BE6.

Inductive coupling between L11 and L12 transfers the energy to a 6EJ7, which does an adequate job as a driver and does not need to be neutralised, although the small value resistor in the grid circuit is a necessary item.

The signal is then capacitively coupled into the 2E26 grid, which should have approximately —30 volts bias on it, to produce a standing current of 10 mA. on the cathode current meter with the plate and screen voltages shown. Output is into a pi-coupler, the tuning capacitor is the same type as used in the v.f.o., and the 140 pF. load capacitor is from a BC611 WW2 walkie-talkie. Another 25 pF. capacitor could be used here with 150 pF. or so of fixed mica capacitor, instead of the BC611 unit.

Cathode current kicks up from 10 mA. to 40-50 mA. with speech and a steady whistle should give 70-80 mA. cathode current and about 15 watts into a wattmeter. Plate efficiency is then close to 50%. A fraction of a milliamp. of grid current may also be drawn under these conditions.

A.l.c. is provided by means of a pair of OA91 diodes as a voltage doubler and applied to the 6CB6 first i.f. stage. Neutralisation of the 2E26 is provided for, although the author has found that very little, if any, was needed. The main requirement being that the final is heavily loaded. A lightly loaded final cannot be successfully tamed (not mine anyway). The loading and tuning is always adjusted, with the aid of a s.w.r. meter, so that one is getting maximum r.f. output.

COILS AND SPECIAL COMPONENTS

L1 and L2: 40 turns of 28 B. & S. enamelled copper wire on a 7 mm. slug tuned former. L3: 20 turns as above. L4: 2 by 20 turns bifilar wound 33 B. & S. spaced ¼" from L3. The formers used for the above coils are 1" long with a ¾" base and are enclosed in a can. Available from the W.I.A. N.S.W. Div.

The following coils are all close-wound with 20 B. & S. enamelled wire and are ¾" inside diameter. L5: 12 turns, L6 12t., L7 12t., L8 2t., L10 6t., L11 9t., L12 8t., L15 12t., L16 10t., L17 14t., L18 9t., L19 7t., L20 2t.

P.a. coil L9 is 5 turns of 10g. copper wire or ⅛" copper tubing with ⅛" spacing between turns and a ½" leg at each end. ¾" inside diameter.

L13 is the coil and threaded former from the SCR522 crystal oscillator and is 9 turns spaced one turn on ¾" diameter. The winding was given a coat of Araldite.

L14 is 8 turns of 20 B. & S. on a 7 mm. slug tuned former. It is also given a coat of Araldite. Make sure the slug is being firmly held in place with rubber strip as a loose slug here will really ruin the v.f.o's mechanical stability.

RFC1, 2, 5, 6 and 7 are 560 uH. video peaking chokes available from Ham Radio Suppliers. RFC3 and 4 are 24 B. & S. close wound on a ¼" former, 1" long.

Relay 1 is a small single change-over type, ex disposals.

Relay 2 is a miniature plug-in type available from S.T.C. at a reasonable price. Its type number is 250AKO.

The power supply transformer was rewound from a discarded one that had a shorted-turns secondary. All windings except the primary were removed and new secondaries were wound on at 3 turns per volt. The use of voltage doubling circuits reduced the amount of rewinding necessary. The power supply was constructed on a 5" x 7" chassis of the same design as the transceiver.

Switch 1 is a miniature 3-pole, 4-position M.S.P. type 73625 A1.

Switch 2 is a miniature 6-pole, 2-position M.S.P. type 73652 A1.

A 40 Metre D.F. Rod with Transistor Pre-amplifier

The direction finding rod to be described here was built as an easy way into hidden transmitter hunts at conventions. The direction finding abilities of the rod are quite good, but its signal pick-up is virtually nil compared with the mobile whip. To help overcome this, a single stage transistor r.f. amplifier was added as an outboard unit and this improved the performance remarkably.

Signals that were inaudible without the pre-amplifier became S5 to S6 with the pre-amplifier. It would appear that the 30 db. plus gain of the SE1001 is being obtained, while the increase in background noise is just noticeable.

The d.f. rod is built from a piece of ½ inch ferrite rod at least 6 inches long, mounted on a U shaped piece of perspex with a handle underneath. The winding is "dipped" to frequency with a g.d.o. coupled with a 2-turn link to the co-ax. lead.

The pre-amplifier is constructed on a piece of matrix board 2 inches square. A shield runs across the centre of the board. Coils L3, L4 and L5 are wound on 7 mm. slug tuned formers with ¾ inch square bases, obtained from the VK2 Division Store. The SE1001 draws approximately 2 mA. and a small 9 volt battery is used as the supply.

L5 and the 0-12 pF. v.h.f. trimmer provide for neutralisation of the SE1001 which is necessary. With the trimmer at minimum, the SE1001 will probably oscillate, this being obvious by the infinite number of whistles and squeaks in the 40 metre receiver. Start winding the trimmer in and the oscillation should stop, although the background "hiss" will be high, but will decrease until a point of least noise is reached at about 6 pF. Further capacitance will cause an increase in the noise till the stage oscillates again at full capacitance. The setting that gives the least noise is the correct point. This adjustment is done with the d.f. rod connected to the pre-amplifier and L3 and L4 set near frequency with the g.d.o. Now peak L3 and L4 on a signal near 7050 Kc. and finally re-touch the neutralising capacitor.

The rod is hand-held by means of the short handle, and satisfactory results are obtained even with the rod held just outside the car window. The signal nulls off the ends of the rod are quite sharp and can be missed if the rod is turned too rapidly. Being hand-held, it is easy to sight along the rod and get a visual heading from it.

No difficulty has been experienced in determining whether the signal is coming from "that a way" or from 180 degrees back the other way, as this can be determined by taking a second heading about a quarter of a mile away from and at right angles to the first one so as to get a cross reference. In some cases a knowledge of the area will eliminate one direction due to the terrain or available access. A sensing whip can be added if desired, but may be more of a physical hinderance than anything else.

—A. S. Lundy, VK2ASI

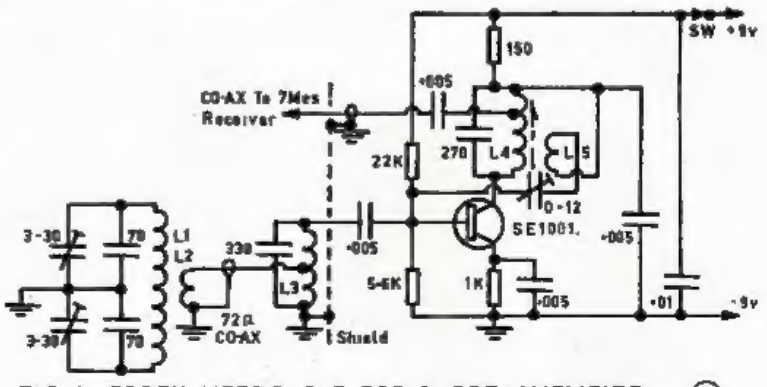

FIG. 1. FORTY METRE D.F. ROD & PRE-AMPLIFIER.

COIL DATA

L1—14 turns on ½ inch ferrite rod spread over 5 inches, 20 B. & S.

L2—4 turns over centre of L1.

L3—15 turns tapped 5 turns from earth end, 20 B. & S. on 7 mm. slug tuned former.

L4—20 turns tapped 4 turns from "cold" end. 20 B. & S. on 7 mm. former.

L5—7 turns of 28 B. & S. wound over L4.

A SIMPLE MULTIPURPOSE SQUARE WAVE GENERATOR

JIM JONES, VK2ZEZ/T (Ex VK3ZEW)*

ON building an oscilloscope and associated probes, I discovered I would require a square wave generator to help me align my low capacitance attenuator probe.

The oscilloscope only incorporated one internal calibration voltage, as this was only a one volt peak to peak 50 cycle sine wave, it was quite useless for the purpose I required.

As the probe had a small variable frequency compensation capacitor (which had to be adjusted), it was nearly essential to use a waveform that would give a wide range of frequencies in one signal—so a square wave was chosen.

The capacitor had to be adjusted so that it gave an equal attenuation over the required spectrum of frequencies (for which the probe was intended).

So once again, I dug deep into my little junk box and dug out several transistors, a couple of resistors and capacitors plus several diodes.

After surveying my components I decided the frequency of the unit was relatively unimportant except the output was to be as square as possible (with a relatively short rise time).

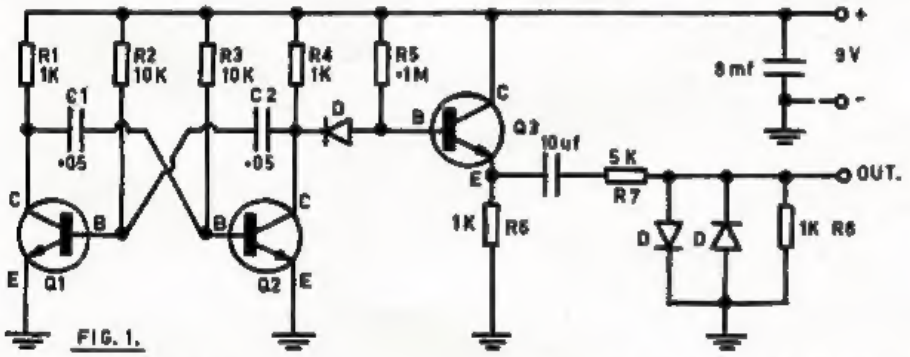

FIG. 1.

All resistors ½ watt, 10% tolerance.
All capacitors 20 volt working.
Diodes: Three 1N758 or any silicon signal diodes.

Transistors: Three 2N2102 NPN, or any audio or switching; or three 2N404 PNP or any audio or switching, but reverse battery connections.

THEORY OF OPERATION

Due to variation in the components, one transistor conducts before, or a little more heavily, than the other.

In our case let us assume that transistor Q2 is conducting more than Q1, more current flows in the base circuit of Q2, resulting in a rapidly increasing collector current. The increasing voltage at the collector of Q2 is coupled through C2 to the base of Q1, decreasing the base and collector current in Q1. The collector voltage on Q1 suddenly becomes more positive, coupling a positive voltage to the base of Q2. This action drives Q2 into saturation and running the system for several hours and monitoring the output, it was found to be quite ample for my requirements.

The circuit is basically an actable multivibrator whose frequency depends on the time constant of the capacitors and resistors used in the base and collector circuit. This circuit will work with nearly any type of small signal audio or switching transistors. I checked the circuit with both PNP and NPN transistors, the only change necessary was to reverse the leads on the battery.

CIRCUIT DESCRIPTION

The simplest circuit I could think of at the time with a square wave output was an actable multivibrator.

The output of this circuit, as shown by the waveform diagram, was relatively poor although it was ample to trigger the next stage which was an emitter follower.

The emitter follower served two purposes: (1) isolation between the multivibrator and the output, and (2) it gave a power gain to the signal, although the voltage gain of the stage was less than unity.

The output was coupled from the emitter follower through an integrating circuit to the limiting circuit.

The limiter basically consists of two silicon diodes placed in the opposite direction.

The output was now both square and a constant 1.2 volts peak to peak. After Q1 into cut-off. The action happens so quickly that capacitor C2 does not discharge, and the entire voltage increase of the collector of Q2 appears across R4 and at the base of Q1. Capacitor C2 then discharges until Q1 conducts, and the cycle is completed. The resulting output from the collector of Q1 is a square wave whose amplitude is dependent on the supply voltage.

The output of the multivibrator is taken off the collector of Q2 and is coupled to the next stage via diode D1. This diode conducts when Q2 is conducting a saturation, also when this diode is conducting Q3 is cut off; secondly, when the diode is off Q3 will conduct and an output will be present.

The output from this stage is taken across the emitter resistor. It is then coupled through an integrating circuit which does not allow the d.c. level to pass (the output swings equal around a zero axis).

The limiter is basically two silicon diodes placed in the opposite direction, each diode will conduct when its forward biasing point is reached. This, in silicon diodes, is approximately 0.6 of a volt, hence the output is now a square wave with a maximum swing of 1.2 volts peak to peak. If germanium diodes were used the output would only be 0.4 volt peak to peak.

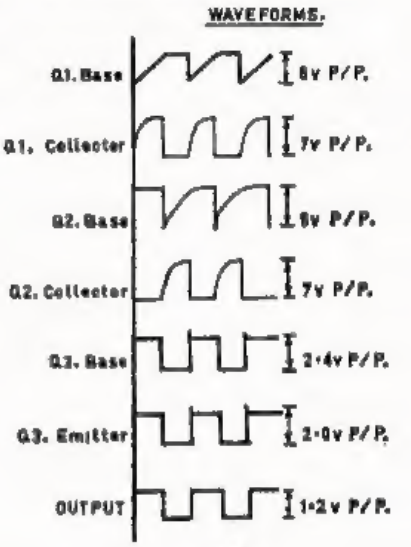

FIG. 2.

Waveforms taken with following settings: 1 volt/cm. plus internal sync. All waveforms are shown but as the c.r.o. had only an a.c. input, no reference to the d.c. was able to be shown.

The following waveforms are typical of those which will be obtained when testing an amplifier:—

(A) Output of generator.

Following are outputs of amp. with differing faults:

(B) No defects.

(C) Loss of low frequency gain with leading low frequency phase shift.

(D) Excessive low frequency gain with lagging low frequency phase shift.

(E) Poor middle and high frequency response.

(F) Excessive high frequency response and ringing.

CONCLUSION

This circuit thus enabled me to set up my oscilloscope probes and the actual oscilloscope. I have also used this circuit for checking audio amplifiers and as a source for a Morse practice system. It can also be used for many other purposes such as signal injection for fault finding, both r.f. and a.f. circuits.

* 1 White Street, Darlington Point, N.S.W., 2706.

Further Data on the Single Loop Triband Cubical Quad

The original article appeared in "A.R." of April 1968, and the author has forwarded more details of these quad elements as a supplement for those interested in such antennas. Tuning seems far less critical compared with a Yagi beam using this system because the quad element has more wire (length).

DATA FOR FIGURE 1

L1—7 turns, 37 mm. diam., 16 mm. long.
L2—4 turns, 37 mm. diam., 18 mm. long.
L3—4 turns, 37 mm. diam., 9 mm. long.

1 mm. copper wire was used for the coils.

Aerial Resonances	S.W.R.
14.15 Mc.	~1 : 1
21.3 Mc.	1 : 1.3
28.6 Mc.	1 : 1.5

Select reflector and director frequencies as usual. Spacing for 21.3 Mc.

Capacitors: Ceramic 38 mm. diam., or pieces of co-ax. cable, 10 kva., NPO.

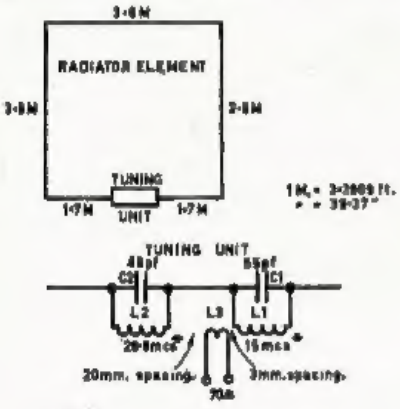

FIG. 1.

Fine tuning:
14 Mc.: Wire length or L1.
21 Mc.: C1 or L2.
28 Mc.: C2.

Asterisk: Resonances without wire loop.

DATA FOR FIGURE 2

Example: Indoor use.

L1—7 turns, 37 mm. diam., 16 mm. long.
L2—4 turns, 37 mm. diam., 16 mm. long.
L3—4 turns, 37 mm. diam., 9 mm. long.

1 mm. copper wire was used for the coils.

Aerial Resonances	S.W.R.
14.15 Mc.	1 : 1
21.23 Mc.	1 : 1.1
28.72 Mc.	1 : 1.3

Select reflector and director frequencies as usual. Spacing as for 21.3 Mc.

Capacitors: Ceramic 38 mm. diam., or pieces of co-ax. cable, 10 kva., NPO.

Fine tuning:
14 Mc.: Wire length or L1.
21 Mc.: C1 or L2.
28 Mc.: C2.

Asterisk: Resonances without wire loop.

—H. F. Ruckert, VK2AOU

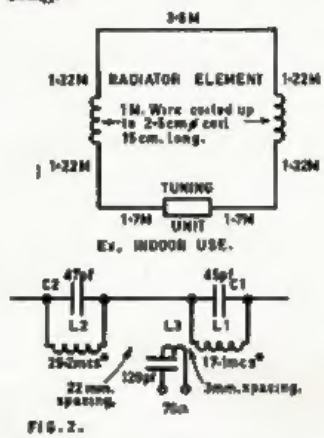

FIG. 2.

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Integrated Circuit I.F. Strip

In the course of designing a transceiver I had occasion to build the i.f. strip as shown. It has certain features that may make it attractive for new projects or as an outboard addition to an older receiver.

It features high gain (37 db.), good stability, product detector or a.m. detector, operation from +12 volts, and limiting or a.g.c. if required.

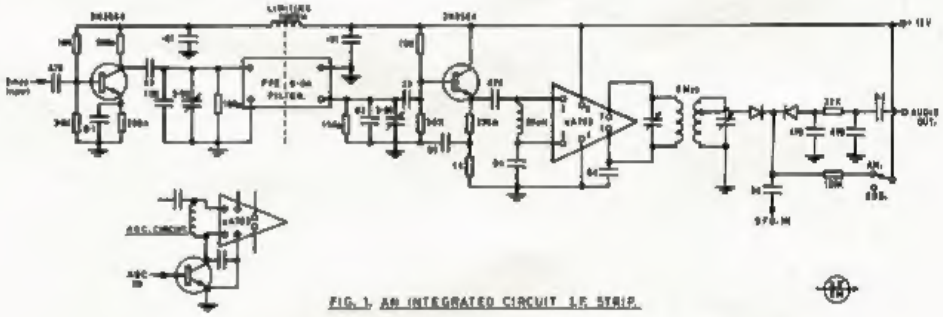


FIG. 1. AN INTEGRATED CIRCUIT I.F. STRIP.

The filter circuitry is straightforward and uses the Pye 9-0A filter, which has a 4.5 db. insertion loss.

The main amplification takes place in the Fairchild's integrated circuit. This is an r.f./i.f. amplifier which is quite attractive in price. The coil is one of the ferrite slugs with a hexagonal hole through it, the wire being wound on toroidally, which results in a compact coil with high Q and little external field. A feature of the uA703 is that limiting is available if required, by merely arranging the turns ratio of the coil so that the effective load impedance is less than 3,300 ohms.

If a.g.c. is required current is bled from pin 5, using an external transistor as shown in the diagram.

The product detector is a simple one but quite effective if high back resistance diodes are used. In the a.m. position, varying the value of the 120K resistor may increase the efficiency of the detector, depending on the diodes used.

—I. Fyfe, VK2ZIF.

Single Sideband Transceiver Development in Australia

PRESENTED with the problem of designing sideband equipment as a commercial project, where would one commence? Who would be likely to have an interest in such a project? Where would you expect to find your markets? A small amount of thought gives as possibilities, the Armed Services, Civil Defence Services, Flying Doctor Service, Fishing Fleets, Amateurs and many others.

Having arrived at this point, is it possible to produce equipment adaptable to two or more of these services, if not in total, at least in part? Recognising the fact that the Armed Services have extremely sophisticated needs, let us for the moment leave them out of our consideration, and look at the requirements of such organisations as the Flying Doctor Service, fishing fleets and small craft. Here there are definite points where the requirements are similar if not entirely identical. They all require one or more fixed frequencies. Power requirements may be similar and their frequencies not too widely spread. With little effort the one piece of equipment may be altered to suit the various services.

On the other hand, the needs of the Amateur call for something more complex. He will want to operate on three, if not five, bands with frequencies spread from 3.5 to 30 Mc. with the ability to operate on any frequency in a selected band, hence the transmitter and receiver must be tunable over each segment.

Just where should the designer start? No doubt various people would give various answers, some would suggest designing firstly the least complex piece of equipment and eventually add the extra features required by the Amateur. Others may elect to design firstly for the Amateur with the object of scaling back to suit the services with fixed frequencies. This writer has no intention of advocating any particular approach to the many problems attached to the making of such a decision. He does, however, commend the efforts of an Australian company that has tackled the problem, and decided in favour of the Amateur equipment approach.

Having made the decision, the specific needs of the Amateur must be considered, and here there are probably as many ideas as there are Amateurs, and it becomes a case of meeting the needs of the greatest possible number at the most economical price. This was the problem given to the staff at the Technical Centre, Australian Consolidated Industries, Sydney. After months of work, specifications were agreed to, designs drawn up, and a large amount of developmental work done, up to the stage where a limited number of possible interested parties could be invited to a demonstration with the object of offering comments and suggestions. It was my good fortune to be included in the list of those invited, along with representatives of the Armed Services, Civil Defence Services, Flying Doctor Service, P.M.G. Department, and selected trade publications.

A.C.I. TECHNICAL CENTRE

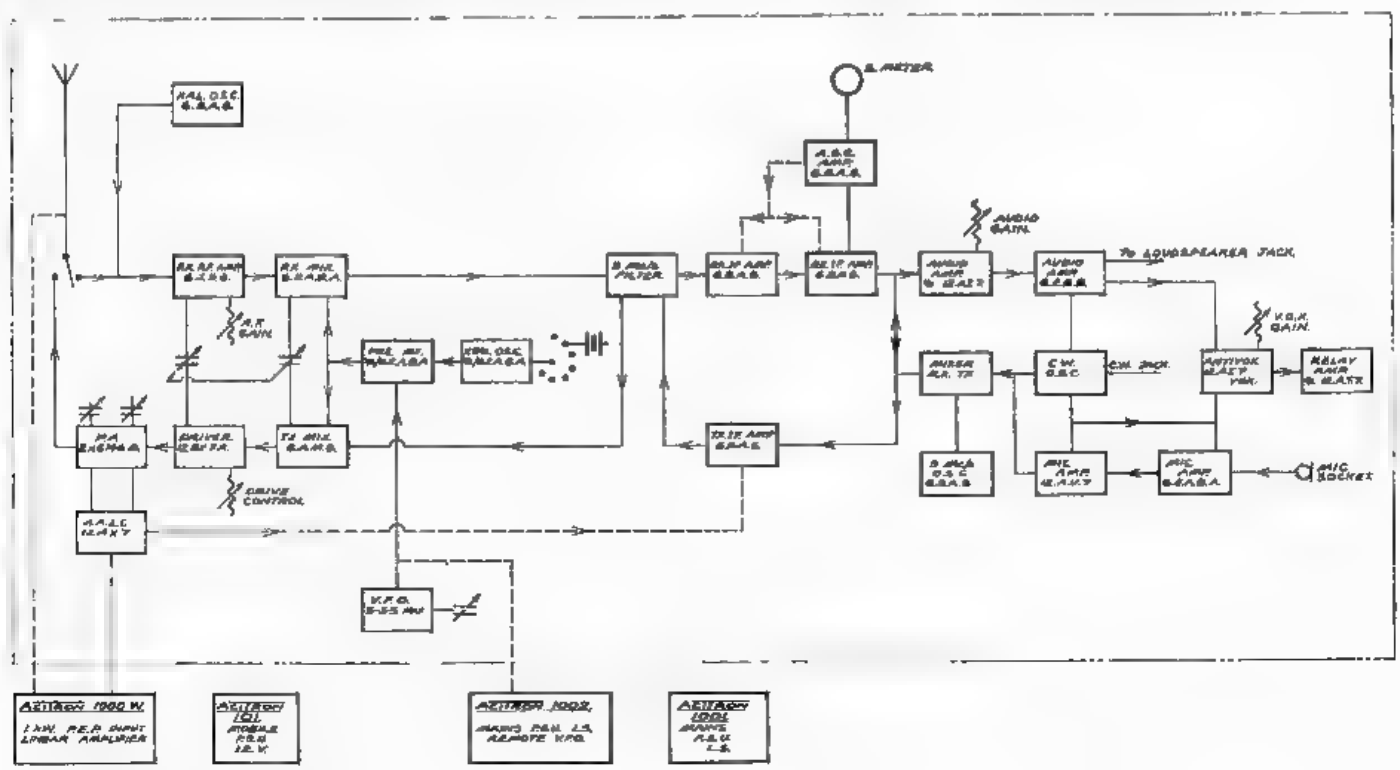
It could be, at this stage, that some readers know A.C.I. only by their slogan, "Good Things Come In Glass". For their benefit, the following brief details of the Technical Centre are included:—

The Technical Centre, with 70 graduates in a staff of 225, is under the direction of Dr. A. Draycott, Manager, Technical Centre. It comprises four departments: Central Laboratories, Engineering Services Group, Central Design Office, and Technical Library.

Central Laboratories' staff presently number 125 including 50 scientists, 9 technical officers and 66 laboratory assistants. The Laboratories comprise:

Four Laboratories—
- (a) Physics Laboratory.
- (b) Inorganic Chemistry Laboratory.
- (c) Spectrographic Laboratory.
- (d) Fuel and Organic Laboratory.

Fourteen Research and Development Groups—
- (a) Glass Technology Research Group.
- (b) Glass Physics and Chemistry Research Group.
- (c) Raw Materials (Geology) Research Group.
- (d) Surface Coatings Research Group.
- (e) Polymers Research Group.
- (f) Refractories Research Group.
- (g) Metallurgy Research Group.
- (h) Paper Research Group.
- (i) Packaging Research Group.
- (j) Chemicals Research Group.
- (k) Radiation Research Group.
- (l) Development Engineering Group.
- (m) Process Control and Electronics Group.
- (n) Technical Consultant.



Analytical Work.—Presently the regular analytical work amounts to an average of 1,200 analytical results issued every week. This is about one-third of Central Laboratories' effort.

Research and Development.—This represents about two-thirds of the effort, although this proportion will increase. Research covers an exceptionally wide range of disciplines, physics, chemistry, geology, metallurgy and chemical engineering. It also embraces many technologies, fuel, glass, plastics, food, polymers, paper, refractories and surface coatings

Facilities.—The Laboratories are very well equipped, with a whole range of scientific apparatus, including photographic and direct reading spectrographs, U.V.-visible, I.R. and A.A. spectrophotometers, flame photometer, gas chromatograph, tensile and compression testing apparatus (Instron to 10,000 Kg, Avery to 50 tons), x-ray diffraction and fluorescence equipment, radiographic and α-irradiation facilities, mass spectrometer, differential thermal analysis apparatus, metallurgical and metallographic testing equipment.

DEMONSTRATION OF EQUIPMENT

The demonstration opened at 4.00 p.m. when Dr. Draycott welcomed the visitors and introduced Mr. John Bays (VK2BLH), Senior Development Engineer, Process Control and Electronics Group, who briefly outlined the purpose of the demonstration. This was followed by an inspection of the Technical Centre, to enable the visitors to gain an appreciation of the extent of the work undertaken, finishing in the electronics section where the equipment was described and demonstrated.

A large amount of interest was shown by those present and many questions were asked by those present. Although the demonstration and discussion was scheduled to finish by 7.30, it was after 10 p.m. before the informal discussion groups broke up and departed.

Although the exercise at present is to decide the feasibility of producing sideband transceivers with input powers of 200 and 600 watts p.e.p., a linear with 600 watts p.e.p. input, power supplies to match, and an s.w.r. meter, many other items of equipment, orientated towards the Amateur market were discussed

Space does not permit us to publish full details of all items being developed, but the following details and block diagram will give some idea of the scope of the work so far done. These details cover the ACITRON 200W, which unit is considered most likely to find a ready market. The price indication is $478 including sales tax, which compares favourably with imported equipment.

PROPOSED ACITRON 200W

This transceiver has been specifically designed for the Australian market, being a low cost, mobile or fixed station, five-band s.s.b./c.w transceiver.

The **Acitron 200W** embodies the following features:—

★ Solid state v.f.o.
★ 80 to 10 metre coverage.
★ S.s.b. 200 watts input p.e.p.
★ C.w. 180 watts input.
★ High frequency crystal filter (9 Mc.).
★ Full coverage of all bands with 500 Kc. band segments.
★ Calibration to 1 Kc.
★ Backlash-free vernier control of frequency with direct frequency readout.
★ Built-in 100 Kc. calibrator.
★ Automatic peak level control.
★ Vox control.
★ May be used as a fixed or mobile operation with the appropriate power supply unit.

The **Acitron 101** is a 12v. d.c. mobile p.s.u. and weighs ten pounds. Price $150 complete.

The **Acitron 1001** is an a.c. power supply incorporating a loudspeaker, and weighs twenty pounds. Price $100.

SPECIFICATIONS FOR THE ACITRON 200W

Receiver—

Sensitivity: Less than 0.5 mV. for 10 db. signal to noise ratio of s.s.b. operation.

Selectivity: 2.1 Kc. at 6 db down, and 4.5 Kc. at 60 db down (9 Mc. filter).

Input: Low impedance for unbalanced co-axial inputs between 50 and 100 ohms.

Output: Low impedance to drive 5 to 10 ohms speaker and high impedance phone output.

Audio power output: 3 watts with less than 10% distortion.

Spurious responses: Image and i.f. rejection better than 50 db and internal spurious signal below an equivalent antenna input of 1 microvolt.

Transmitter—

D.c. power input: S.s.b. (A3J emission), 200 watts p.e.p. for normal voice continuous duty cycle; c.w. (A1 emission), 180 watts, 50% duty, tone generator monitor.

R.f. power output: 120 watts p.e.p. on 80, 40, 20, 15 and 10 metres into 50 to 100 ohms.

Spurious output signal: 60 db below rated output.

Harmonic radiation: 45 db below rated output.

Transmit/Receive operation: S.s.b. manual or vox, c.w. (vox from keyed tone on c.w.). C.w. tone internally switched to receiver a.f. amplifier for monitoring purposes in both the c.w. and tune-up position.

Microphone input: High impedance dynamic type.

Carrier suppression: Minimum 45 db down from single tone input.

Unwanted sideband suppression: Minimum 45 db down from single tone input at 1,200 cycles.

Third order distortion: 30 db down from two-tone output.

Peak level control: 10 db or greater at 0.1 milliamp. final grid current.

Frequency coverage: 3.5 to 4 Mc., 7 to 7.5, 14 to 14.5, 21 to 21.5, 28 to 28.5, 28.5 to 29 Mc.

Frequency stability: Drift less than 100 cycles per hour after 30-minute warm up from normal ambient temperature conditions. Less than 100 cycles for a +10% line volt variation.

Modes of operation: Upper sideband 28, 21 and 14 Mc.; lower sideband 7 and 3.5 Mc.

Dial calibration: Every 1 Kc.

Dial mechanism: Backlash less than 20 cycles.

Calibrator: 100 Kc. crystal.

Audio response: 200 to 3,000 cycles per second within 6 db.

Front panel controls: Main tuning dial, driver tuning and pre-selector, final tuning, final loading, band switch, function switch, meter switch, gain control, audio gain control (on receive).

Side controls: Meter zero control, vox sensitivity, vox delay and anti-trip neutralisation, phone, and c.w. jack.

P.s.u. requirements: 12v. 9a., 240v. d.c. at 100 mA., 300v. d.c. at 30 mA., 800v. d.c. at 250 mA., 100v. d.c. at 20 mA.

Mobile Acitron 101 is designed for 12v. operation, positive or negative earth. Receive current 6 amps., transmit current 15 amps., continuous peaking to 35 amps.

The Acitron 1001 may be used for 110/230v. a.c. 50 to 60 cycles mains supply, incorporates a loudspeaker and a low impedance phone jack together wth a manual transmit/receive switch.

It must be understood that the specification, as quoted, is only tentative and could be altered in the light of the discussions which followed the demonstration.

No attempt has been made to evaluate this equipment, as this would require much more time than was available at the demonstration, suffice to say that from what was seen and heard, a most favourable impression was obtained, and we hope to have the opportunity of making a more comprehensive examination and test at a later date.

☆

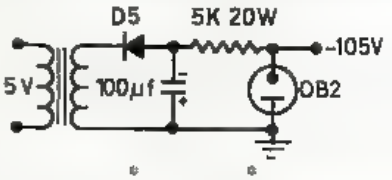
ERRATA

Some mistakes appeared in the circuit diagram of "A Simple Low Cost High Voltage Supply" (March 1968 "A.R."). They were:—

(a) D5 was drawn in back to front.
(b) The OB2 was also drawn in back to front.

As the circuit is shown, the output would be positive instead of negative. This could cause the 100 uF. capacitor to short circuit and in turn cause D5 to burn out.

The corrected circuit is shown below.



In the July issue of "A.R." (page 8) the article, "Adapting the Geloso G209 for S.s.b. Reception," was submitted by Ron Fisher, VK3OM. It is regretted that his name was omitted.

Join in the Victorian 160 Metre Contest

In order to promote activity on 160 metres, the Victorian Division of the W.I.A. has organised a contest, the rules being given below. The contest is open to all comers, and we hope to receive logs from all States. Note that cross band operation is permitted, so you can join in the fun even if you have no transmitting equipment for 160.

RULES

Purpose: To encourage greater occupancy of the 160 metre band.

Dates and Times: 1200 E.A.S.T., Saturday, 5th October, 1968, to 1200 E.A.S.T., Sunday, 6th October, 1968.

Band 160 metres—1.80 to 1.86 Mc. Cross-band operation is permitted.

Modes: All authorised modes may be employed, and cross-mode operation is permitted.

Logs as follows:

Date/ Time E.A.S.T.	My Freq. Band	His Freq Band	Call Sign Stat'n Work.	No. Sent	No. Revd.	Points Claim.

Exchanges: RS(T) followed by three digits, commencing at 001.

Scoring: Stations may be contacted once during each calendar day and scores claimed for each of those contacts.

Stations may count, for scoring purposes, pre-arranged cross-band contacts, but not pre-arranged 160 metre band contacts.

160 Metre/160 Metre contacts:

Fixed (5 pts.) to fixed (5 pts.).
Fixed (5 pts.) to Portable/Mobile (10 pts.).
Portable/Mobile (10 pts.) to Portable/Mobile (10 pts.).

160 Metre/Cross-band contacts:

160 mx fixed (5 pts.) to fixed (5 pts.).
160 mx portable (10 pts.) to fixed (5 pts.).
160 mx portable (10 pts.) to portable (5 pts.).
160 mx fixed (5 pts.) to portable (5 pts.).

A bonus of 20 points may be claimed for each interstate contact, and a bonus of 30 points may be claimed for each overseas (DX) contact.

A bonus of 20 points may also be claimed for contacts make from a Victorian National Park.

A multiplier of 1.5 may be applied to the score for the use of a power input of less than 10 watts to the final stage.

Listeners: 10 points per contact heard on 160 metres.

Entries: Logs must be returned to the Admin. Secretary, Victorian Division, P.O. Box 36, East Melbourne, Vic., 3002, by Friday, 1st November, 1968.

Awards: At the discretion of the Council of the Victorian Division of W.I.A., the following awards may be made:

VK3 Stations—
Highest score: (a) Fixed, (b) Portable/Mobile.
Second highest score: (a) Fixed, (b) Portable/Mobile.
Highest Listener's score.

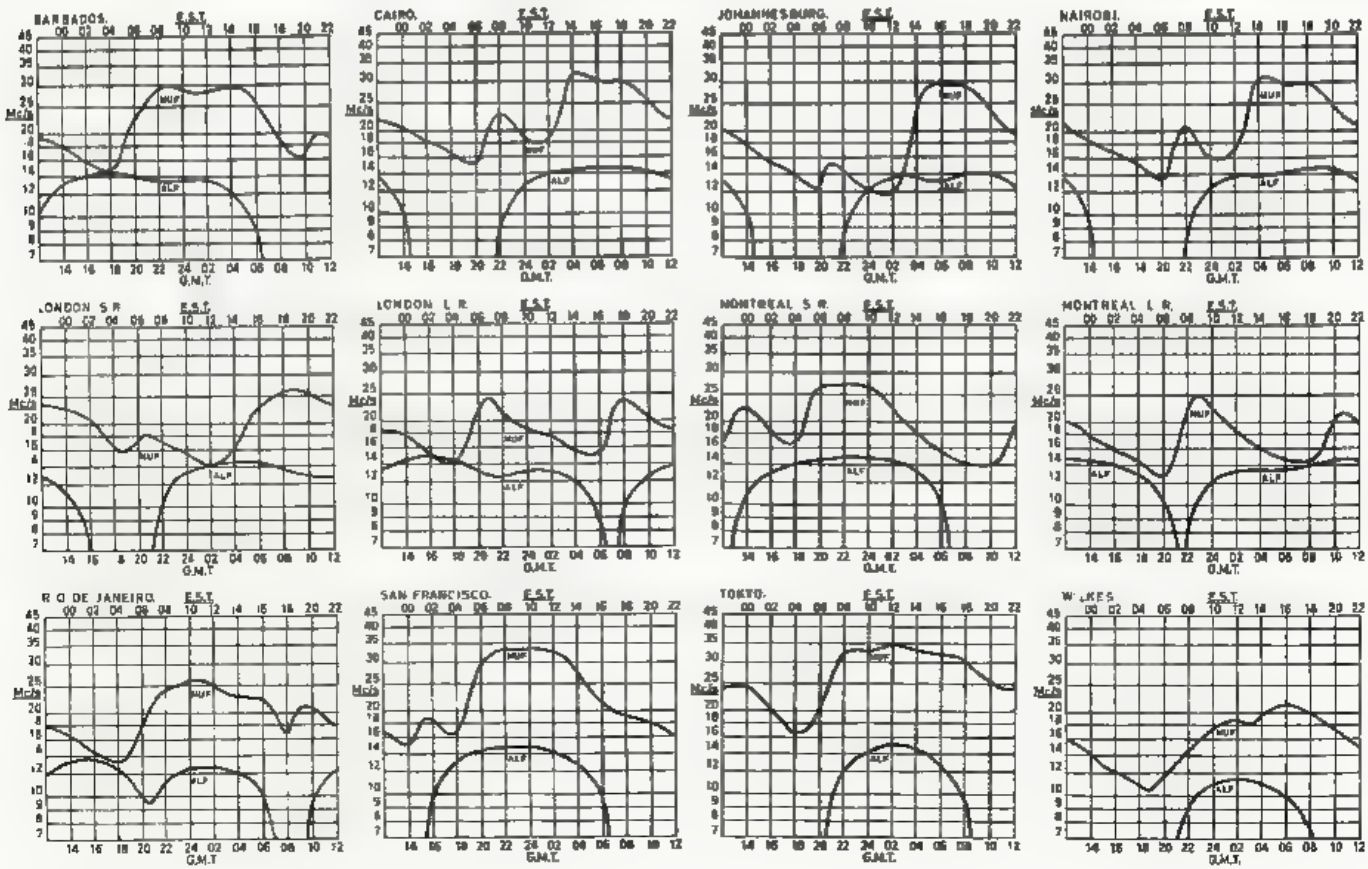
Others Stations—
Highest score in contacts with VK3 stations.

AMATEUR FREQUENCIES:

ONLY THE STRONG GO ON—
SO SHOULD A LOT MORE
AMATEURS!

PREDICTION CHARTS FOR SEPTEMBER 1968

(Prediction Charts by courtesy of Ionospheric Prediction Service)



Field Day Fun—or—Heat, Flies and Donga

SITUATED approximately 130 miles north-west of Port Augusta is an area at times featureless, rock strewn and generally quite inhospitable. This is South Australia's far north, and usually considered only good for running a few sheep. Acres to the sheep incidentally, not sheep to the acre. Trees are few and far between and then only a form of stunted growth.

Into such an area my associate in the Field Day, Ron Thrum, a keen S.w.l., and myself set off to establish a portable station.

The first problem, having sorted out the matter of equipment, was to make it to the selected site. This was on the old road to the opal mining town of Andamooka on the south-east edge of a hill overlooking the Commonwealth Railways siding of Wirrapa.

A week or so previously the area had received an unexpected 2 inches or so of rain (annual average 7 inches) which really "does things" to the dirt roads. The top-soil has a high clay content and water will lie in pools for weeks after such a downpour. So, somewhat dubious as to how we'd go, we began our little trip.

WHERE'S THE ROAD?

Three choices of track were available with two entry points quite close. The first of these two looked quite promising for the first 800 yards, but then across the transcontinental railway line and onto a gluey surface. A continual slide for the next 500 yards, a bend negotiated and then "where is the 'road' (track)?" A path of sorts identified by saltbush edges and consisting of loose rocks was discernible, so "press on" was the order of the day.

Several hundred yards of this and it was deemed advisable to keep going, "It might improve!" However, the rain coming down the side of the hill had done a thorough job and the rocks gave way to boulders strewn everywhere and weighing anything up to 300 lbs. With the wheels coming up against these, it was often necessary to back a little and lever them out of the way.

With Ron selecting the most likely path, shouted instructions, loud and slightly naughty words (no one around for miles), more levering and with a sharp drop on one side, we continued seemingly ad infinitum, climbing all the while to make the top of a crest. This took about half an hour at a maximum speed of nearly 2 m.p.h. Then down the hill, turn left at the bottom, then climb for about three miles quite steeply

But! Down the hill was the same and at the bottom the creek had flowed quite swiftly, allowing about two inches to spare each side of the wheels, still wet and slippery, with a two-foot drop one side and easy four feet the other Bottom gear, eyes closed and gun the motor, hit the brakes, fortunately power type, and a big sigh of relief. Up the hill in reasonable comfort as the water had run directly down, producing mere furrows. All of 15 m.p.h. now at times.

The spot was located next to a large concrete water tank about 30 feet high and 200 feet across with a ladder to the top. This is on the pipe line. Dipoles were strung from the top rail of the ladder with the other end anchored on the ground with, you've guessed it, rocks.

Our bottles of cool drink were attached to wires and lowered into the water tank to a depth of 20 feet or so. The radiator was also filled from this source at an opportune moment.

EQUIPMENT

This comprised a petrol generator set placed about 300 feet away to reduce interference problems, none encountered from this unit anyway, an FL100B transmitter and my much worked over AMR300 receiver. Suffice to say, this combination performed admirably for the duration of the contest.

While daylight lasted it was considered advisable to try the alternative route out. A sked with KX6FJ also necessitated a return to base where the beam was available, not to mention dinner awaiting us at home.

ANOTHER TRACK OUT

After disconnecting antennae and power feed, packing tx/rx, and a false start down a wrong track, we were away. All okay till we came over the crest. Here again the water had run down the steep slope but the furrows, up to three along the length of the road, had been gouged out to depths of about four feet in places and had to be straddled, with similar drops each side. However, just a matter of care and slow going.

Down on the flat all was well, as running in loose sand is a common experience. A still-running creek only inches deep forded and then, no, not more rocks, but a dry creek bed. The water had rushed down this so swiftly it had thrown up a sandbank about four feet high on our side and also left a sandy bed. Digging wheel tracks through the sand bank and levelling it off provided an approach with merely two-foot banks to negotiate. Here the abundance of rocks saved the day, although we exhausted the supply of flat ones in that locality in building our bridge

On to the main road and our evening sked made with minutes to spare.

With Ron busy for the evening, I returned to the site for several hours, using our latter route without further misadventure. The road never looks as bad at night. Back home again, and the soft bed felt luxurious.

COME THE CONTEST

Next morning back for the long stint, this time also equipped for the heat with more soft drink and a large vacuum flask filled with cordial and lovely big ice cubes. A mistake! The insides of such flasks are not designed to have ice blocks slammed against them. We managed to salvage the ice and didn't cut our mouths on any broken glass.

Into operations again, but with the station wagon closed up, we dripped perspiration, and with doors and windows opened we were besieged by the friendliest of flies! This was dealt with by alternating the two states of being and copious application of insect repellent and fly spray, of which we made sure we had an abundant supply.

I might add that the temperature can climb to pretty high figures in this area, but swimming is not allowed in the water tanks!

But the contacts came along and we really enjoyed ourselves throughout the contest. Hope to see you in it again next year, 1969.

By the way, any requirements for rocks can be easily met on demand, F.O.R. to your nearest railway station, and if you're driving to Andamooka we'll forward snaps for the best route by air mail.

—Ian VK5QX/P.

DX

Sub-Editor: PETER NESBIT, VK3APN
32 The Grange, East Malvern, Vic., 3145

BAND NEWS (all times are in GMT)

28 Mc.: Conditions seem to have dropped off somewhat and there has been less activity lately. As far as U.S.A. is concerned, the band is opening and closing later in the day, with W6s being audible as late as 05z. Frequently little on before 23z.

FG7XX, Guadeloupe, 28610 at 2300z.
4U1ITU, Geneva, 28600 at 2130z.
F8ADY is on 28400 at 2030z.

The following stations are active between the hours of 05 and 07z. YJ8BW, ZS5FF, ZS-5JM, ZS5LV, ZS5LB, ZS8H, ZE7JZ, 9J2s BC, IE and DT, OH2OI, CR7IC, ZS1XX.

Between the hours of 19 and 21z 8Y5RM, IIBAT and PA0DO.

HG2RI in Hungary on 28057 1230z.
VU2DKZ active on 28066 at 0745z.
XW8BS 28060 at 1050z.
YA1ZC is a good one, 28006 1234z.
ZD8Z is Ascension Isl., 28002 1220z.
ZE1WFC, Rhodesia 28020 1230z.
HS3DR 28603/715 week-ends at 05 to 10z. QSL K7CBZ.

21 Mc.: ZD8HAL Ascension Isl., is on 21283 at 1900z.

VP8CB 21350 2304z.
EA8EF 'Angelo,'' Canary Isl., 21297 2110z.
CR4AE "Flavio" 21301 1907z.
9Q5HU 21283 1952z.
9Q5EP is also on 21283 at 2007z.
CO2DR 21271 2328z. QSL to Box 6906, Havana, Cuba.
MP4DAT, Das Isl., is counted as Bahrain. 21015 1300z (but possibly QRT by now). QSL to G3USK.
KG4AM 21325 2020z.
5Z4LG 21286 at 1987z.
OD5FM 'Bernie" 21331 at 0021. QSL OD5FM.
CR9AK on 21350. QSL goes to W1CBH.
9X5SP, 21317 0010z. QSL Box 419, Kigali, Rwandn
OW8AL "Jean" 21288 at 0040z.
PZ1EW 21255 2040z.
5H3KJ 21263, 2215z.
6O1BG, 21370 2000z. QSL to W1YRC.
TA1QR, 21039 at 1910z.
TN8EG, 21060 at 0645z.
OW8DW on 21059 at 2007z.
9L1TL, 21047 1254z.
CR4AE, 21275 at 1520z.
PJ5MG, 21029 at 2214z. QSL via W8IGW.
5H3JR is on 21290 at 2305z.
9H1BD 21342 at 0911z.

14 Mc. ZL5AA 14040 at 00z, also 14195 at 11z. QSL to ZL2GX
ZD8CC, 14208 at 2218z.
TJ1AL, "Garry," is on 14191. QSL W2MES.
FB8WW, 14087 1156z Says QSL to W4MYE.
KG6s ARF AQY, ARK and K1FNA/KG6 scattered between 14015 and 14070, 0630-0930z.
OD5BZ, 14215 03z. QSL via OD5FM, Box 1824, Beirut, Lebanon.
VQ8s CC, CG and C5 are on 14205, 171 and 211 respectively around 12 or 1230z. All are located at Mauritius.
9M2US, 14005 10z. QSL via K3JJG.
9N1MM on 14195 at 2330z, listens for replies on 14215-220.
AP5HQ is on almost daily on 14030-050 at 21z onwards.
FR7s ZD ZS 14195 at 04z. QSL via Box 130, St. Pierre, Reunion Isl.
9V1OC, OV, OW and OY spread between 14020 and 14040 around 0845 to 1015z.
ZD8Z on 14208 at 23z, says QSL via W8CUF.
JW2BM, Svalbard. 14165 at 1230z. QSL to LA5YJ
From 00 to 03z the following are on: MP-4BBW, MP4BGE, JX7AR, CR4BB, CO2BB.
From 03 to 05z: SV1CE, KG4DH, VP2LS, TR8AG, FP8CS, PJ5MG, VP2AC, VP2AW (QSL W9FIU) PY0BLR (Trinidade), VP2KM.
From 05 to 07z: 4U1ITU, HV3SJ, PJ2CA, MI3, PZ1CQ, ZB2A, TJ1AL (QSL Box 1037, Douala, FS7RT, LX2FB.
From 07 to 09z: 5U7AN, 9Y4AT, KJ6BZ, CR4BC, OY4HQ, GL3OLJ (14072), 7X0AH 14161
Not very much between 09 and 17 or 18z: LZ0WYF, FB8ZZ, 3A2CP, HZ1AB (14121), YB0ZZ After this time, activity picks up until about 23-24z with the following pickings: YS1AG 14069, TI5CPG 195, 7Z3AB 242, OY8YL 015, ZD8J 026, HC8RS 157, ZS3XQ 050, PZ1BW 130, 9G1GF 193, VP5AA 200, FY7AG 153, and TA1MGP 075.

7 Mc: After sleeping over the past few months, this band appears to be waking up at last. Odd countries and prefixes keep popping up from time to time.

TI2PZ "Jose" on 7020 at 1020z.
PZ1AH on about 7015 1030z.
TA2RK, 7015 1945z.
8P6AG, new prefix for Barbados (VP6), 7025 0350z. QSL via VP6AM.
4A1EK, 7040 c.w. at 0725. QSL via XE1EK.
VO1AK on 7030 at 23z (long path).

HPC is a beacon station in Panama and uses FSK on 6979 Kc. It appears to be operating 24 hours a day, and provides a handy indication of when 40 mx is open to South America.

3.5 Mc.: Vic ZD5X is often on 3505 at 20-21z. He hopes to be on 160 mx by October.

Other stations QRV on 80 mx around the same time include 9J2BC and ZS5QU.

XW8BP, 3505 12z, during week-ends.

VS6DO can often be heard near the low end from 09z.

YJ8BW is also reported active some nights around 10z.

1.8 Mc.: Although 160 has been disappointing this winter insofar as DX is concerned, it appears to be improving now and should carry the possibility of DX towards summer

The following stations are reportedly active on 160 GI3s FF, NZZ, OQR, SGR, WSS; GM3s OTF, OXX, UQL, VAR, WIG; GW3PPF, OK-1AWQ, ZC4RB. Operation is centred around 1820-30 and 1880 Kc., from 20 to 23z. (Whether we VKs can work them now is another story, but keep listening over the next few months as conditions improve.)

W4BGO is looking for VK contacts on 1805 Kc. Ben holds a weekly sked with VK3APN on this freq. at 1045z every Monday, so take a listen for him.

The following stations are good markers for indicating 160 mx openings: Europe, DHJ 1832 Kc; U.S.A., WCC 2036 Kc., KPH 2045 Kc., and WNU 2048 Kc.

As you can see from the above, 160 mx news is rather scarce, so if you work any DX or hear any news about "top band" please let this column know.

ASSORTED

KD6AA is about 600 miles off Saipan, and is expected to be approved as a new country. Should be QRV soon, if not already.

VR3DY says QSL via Box 762, Kaunakakai, Molokai, Hawaii, 96748.

VK0IA's home call is VK3IA, but requests QSLs via VK7ZKJ.

KG6IG is now QRT and can be QSL'd Box 1351 Torrance, C.A., 90506.

HK0BKW, Box 219, San Andres Isl., Colombia

A DX-pedition to San Marino is planned by 11IJ on or about Sept. 15. The call on s.s.b. will be 8A1A and on c.w. M1H. Operation 10-40 mx. QSL K4PVZ.

UZ0EA operates from Sakhalin Isl., and should please the WPX boys.

3V8AA, QSL via F5OJ. Include three I.R.C. but no s.a.e. for direct reply.

9E3USA and 9F3USA are contest call signs of ET3USA.

W9WNV, W0BN is now the QSL manager for all of Don's activities 1965-68. Send s.a.e. and IRCs for outstanding QSLs to Art Altemiller, 8713 Charlton In., Affton, Missouri, 63123.

SV0WFF and TV0WL Crete's entire Amateur population, are both rumored as QRT. WFF is returning to the U.S.A.

ODD ONES

Doc ZF1DX reported as a pirate. The real ZF1DX was a DX-pedition specialising in 7 and 21 Mc. c.w.

XZ2AH is a pirate according to the real holder of the call, who says that no legitimate XZ2 activity has transpired since 1964.

HV0CN/PX—invalid call.

8X3AA "Cray Isl." (where???) is a pirate. Don't send cards via VE2DR. ITU states that it has never issued 8X to Amateurs, and furthermore, 8T to 8Y is reserved for India.

ZA7F, ZA1AB, YV0X. Their QSL "managers" (DJ9OR, YU4BJK and YV5BOA) are returning cards.

ACTIVITIES

David VK3QV proves that 10 mx is certainly still producing DX, as shown by his following s.s.b. contacts: DJ5BV, EI8Q, JA3, JA4, KH-6QB, UA9CBW, UP2ADZ, VE3CDP/W9, ZC4FN, ZL1AFA, ZS5DG, 4A1AC, 7X0AH, 9G1FV, 9J2BC, 9Q5ME, 9V1MS and all W/K call areas except W1. He reports that Dave VK3DL/W5 is on 28504 most Sunday mornings about 01z looking for VK contacts. (Nice work Dave, please keep the news coming in.)

Ken VK3TL says that the coldness of the evenings has reduced the quantity of DX (Yes! Believe it or not, Melbourne isn't warm and sunny quite all the year round), but the quality of the DX remains; on 20 mx c.w./s.s.b.: JW2BH, FP8CS, VP1PV, CT2AA 0810z, and PX1JI 0725z. Ken also submits a list of the best QSLs he has received, containing such stations as CE2PK, YA1BW, 5L2KG, 7X5WW, 9L1KG, FH8CD, etc., etc., totalling 36 l.b. calls. (It has been said that as far as the really rare DX is concerned, it is often much harder to get the QSL than the QSO. So, excellent work, Ken.)

Dud VK4MV has been grappling with the DX and recorded the following nice list: on 10 mx s.s.b.—UA9CBW, 15 mx s.s.b.—KL7FOS (Kodiak), W1FZJ/KP4, 9U5CR, KV4EY, on 20 mx s.s.b.—SK6AB, ZL5AA, CR6LF, TU2BD, 9G1DY, ON8XA, I0ART, LX1AJ, FP8CY, TU-2BQ, TJ1AL, CR6IV CR5SP, 9G1GG, GW4NZ, UW0IH, VO1DD. Times varied between approx. 06 and 10z. On 15 mx c.w., Dud worked UV0KK and on 20 mx c.w. he got GW6YQ, VP9FU, ZB2BO, UR2KAY, UP2KBA, EA5IC. These contacts all took place around 07z. Dud also says, "The QSO with 9G1GG was rather interesting, as a fault in the tx prevented the use of s.s.b., so I called him on d.s.b. and he came back . . . it was my first QSO ever on d.s.b." (Very good Dud, thanks for the list. Interesting to hear about your adventure with the 9G1; there's not much of the d.s.b. type mode left on 20 these days, either with or without carrier.)

Barry VK5BS is now quite active on 160 mx, and says that DX on the higher bands has suffered as a result. (Don't worry about it, Barry, wait till the PYs and the ZSs start thundering in on top band—then you can show them!) Barry has still kept his fist in good shape as evidenced by the following 80 mx c.w. DX he has been working: YN1MO/W4, OK3CBN, VO1FB, 8Y5GS, JT2AB, HC1GC, VU2AYZ, G5WF, G3AIR and FG7XX. (Many thanks, Barry, please keep the news coming in—and keep us posted about your 160 mx activties, too.)

Don VK3AKN is another 10 mx man, as he has obviously been extracting the most out of the band with the following QSOs (all 28 Mc. c.w.): ZE1WPC, WB6ZBM, WA9CFU, JA1AVV, UT5GP, UC2CX, W6OV, W1DA, VE-7AC, WA3FXW, VE1VB, UW6MA, UA6ADZ, ZE4JS, G2DC, F9EA, UL7ANB, JA6CLO, W2ELW, ZL1OY, UA4RK, KG4DO, KH6GT, W9FVK and many other Ws and JAs. Don says that he has been hearing DM5IGY occasionally at 05z onwards, but no Amateur signals until later. (Nice list, Don, please send more.)

Finally, a letter from David VK5QV again has just arrived. (He says this column isn't up to the minute?) Dave says that 10 mx has been in the mid-winter doldrums and a local but very elusive power noise has been making life difficult. "Of course, it peaks at 28 Mc," he says with obvious indignation! Latest contacts on 28 s.s.b.: HL9KQ, JA2/3/8 and 0, KG6AAY, KS6CL, VE7AZO/W8, VK3DL/W5, 9J2NW 2880S 0830z, and all U.S. call areas except 3 and 7. (Thanks again, Dave—Peter.)

SOME QTHs

ZC1CP—W4YKH.	SV0WL—W2CTN
9X5GG—W2GHK.	4S7PB—K0CAZ.
PX1KT—F1KT	5W1AR—W4ZXI.
5U7AN—W4WHF.	8R1C—WA4UOE.
HB0LL—DL7FT	ET3USA—VE3IG
CE0AE—WA5PUQ.	ET3FMA—W7WLL.
I8CLC—I1CLC	HK0BKX—WA8AHF
I9RB W2GHK	HK0BKW—WA8AHF.
FB8XX—FR7ZD.	TF2WKX—WA6IJG.
FY7YG—W2CTN.	YA1DAN—KP4CL.
VS6FX W2CTN	XW8CAL—VE6AO.

SUMMARY

Many thanks to the following for supplying material for this month's column: The Florida DX Club, The L.I. DXA, ZL2AFZ, VK3TL, VK4MV, VK5BS, VK3QV, VK3AKN and L6042.

Information is always needed to keep this column alive, so please keep sending anything of interest to the address at the top of the page. News on 40/80/160 mx is particularly needed. The deadline is at the end of each month. See you next month if I haven't perished at the hand of some irate Amateur by then, hi. 73, Peter VK3APN

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CONTEST CALENDAR

Until 31st December: Concurso Mexico 1968.
7th/8th Sept.: D.A.R.C. 3.5 to 28 Mc. (Phone)
7th/8th Sept.: VU/4S7 DX Contest (c.w.)
14th/15th Sept.: VU/4S7 DX Contest (phone)
21st/22nd Sept. S.S.A. (Swedish) 3.5 to 28 Mc Contest (c.w.).
28th/29th Sept. S.S.A. 3.5 to 28 Mc. Contest (phone)
5th/6th Oct.: VK/ZL/Oceania DX Contest (phone section)
12th/13th Oct.: VK/ZL/Oceania DX Contest (c.w section)
12th/13th Oct. 28 Mc. Phone Contest.
26th/27th Oct. "CQ" W W DX Contest (phone section
7th Dec., 1968, to 12th Jan., 1969: Boss Hull V.h.f. Contest.
1st/2nd Feb.: John Moyle Memorial National Field Day.

NEW CALL SIGNS

MAY 1968

VK1RY—F. W. N. Ryan, Station: 47 Cockle St., O'Connor, 2601; Postal: P.O. Box 43, Canberra, 2600.
VK1ZOO—J. A. Gardner, Reid Hostal, Allara St., Canberra City, 2601.
VK2LH—W. E. Pearson, 8 Rawson Rd., Berowra, 2081.
VK2RA—R. A. Priddle, 34 Cleveland St., Wahroonga, 2076.
VK2ABS—B. S. Sullivan, 22 Chief St., Belmont, 2280.
VK2AJE—B. L. Mills, 15-17 Coral Rd., Cronulla, 2230.
VK2BDB—D. A. Bolton, 115 Terry St., South Hurstville, 2220.
VK2BDK—D. Lee, 95 Seaforth Cres., Seaforth, [illegible]
VK2BGJ/T—J. Gray, 121 Cardiff Rd., South Wallsend, 2287.
VK2BJB—B. J. Booth, 2 Ethel St., Burwood, 2134.
VK2BKS—S. A. Knowles, 23 Rainbow Pde., Peakhurst, 2210.
VK2BLH—J. Bays, 30 North East Cres., Lilli Pilli, 2229.
VK2BNA—A. Nutley, 32 Clarke St., West Ryde, 2114.
VK2BOD—O. M. Duffy, 83 Viking St., Campsie, 2194.
VK2BRP—P. Richardson, 37 Fourth St., Depto, 2530.
VK2BTN—N. R. Threlfo, Station: 105 Roxburgh St., Stockton, 2295; Postal: P.O. Box 86 Newcastle, 2300.
VK2BUA—U. H. Aalbers, 667 Pemberton St., Albury, 2640.
VK2ZCC/T—C. R. Coverdale, 16 Sorrell St., Parramatta, 2150.
VK2ZDE—D. A. Clift, Station: 185 Rusden Rd., Blaxland, 2774; Postal: P.O. Box 10, Katoomba, 2780.
VK2ZJG—J. Holt, 63 Mepunga St., Concord West, 2138.
VK2ZMW—M. G. Penman, 39 Tobruk Cres., Orange, 2800.
VK2ZPJ—R. F. Jackson, 26 Ada Ave., Wahroonga, 2076.
VK2ZTJ—A. J. Thompson, 3 Gow Ave., Albion Park Rail, 2527.
VK2ZYA—A. C. M. Anderson, 33 Oak Rd., Kirrawee, 2232.
VK2ZYB—G. K. Chapman, 11 Bayswater Rd., Roseville, 2069.

VK3CR—A. A. Andros, 503 High Street Rd., Mt. Waverley, 3149.
VK3HB—B. H. Baker, 7 Kara St., Doncaster East, 3109.
VK3QI—P. R. Forbes, 44 Hamel St., Box Hill South, 3128.
VK3QW—P. N Engelman, 26 Alimar Rd., Glen Waverley, 3150.
VK3TX—D. R. Blackman (Dr.), 129 Clayton Rd., Clayton, 3168.
VK3WA—M. A. Webb, 10 Fran Cres., Rosanna, 3084.
VK3AAU—G. H. Gaspars, 23 Hudson St., North Caulfield, 3161.
VK3AOT/T—R. J. Halligan, 41 Windsor Ave., Mt. Waverley, 3149.
VK3AQH—A. M. Carman, Mortlake Rd., Warrnambool, 3280.
VK3AQJ—D. I. Ralph, Flat 4, 58 Chestnut St., Richmond, 3121.
VK3AQR—D. R. St. John, 7 Coquette St., West Geelong, 3218.
VK3AQV—W. T. Moffat, 83 Mathoura Rd., Toorak, 3142.
VK3ASQ—M. R. Trickett, 8 Matlock St., Herne Hill, 3218.
VK3AUF—J. H. Beadle, Flat 21, 41 Northcote Ave., Caulfield, 3162.
VK3AVO—M. H. G. Evared, 13 Sage St., Oakleigh, 3166.
VK3AWR—W E. Knapp, 35 Alandale Rd., Blackburn, 3130.
VK3AYY—C. J. D. Smith, 80 Beaver St., East Malvern, 3145.
VK3AZE—A.P.I. Radio Club, Gillies St., Wendouree, 3325.
VK3ZAP—E. C. Lawson, Station: Kelvin Gr., Cherry Tree, via Sebastopol, Postal: P.O. Box 1, Sebastopol, 3356.
VK3ZDY—C. J Lefel, 24 Chippewa Ave., Mitcham, 3132.
VK3ZEO—G. N. Pattie, 7 Boyne St., Geelong East, 3218.
VK3ZGG—R. G. Rowlands, 35 Cratloe Rd., Mt. Waverley, 3149.
VK3ZGL—I. J. Kennedy, 15 Cook St., Newtown, 3220.
VK3ZJB—D. A. Charles, 156 Melbourne Rd., Williamstown, 3016.
VK3ZKT—R. A. Eldred, 59 Day St., Bairnsdale, 3875.
VK3ZKY—R. G. O. Wilson, 45 Pleasant Rd., Hawthorn East, 3123.
VK3ZLZ—I. W. Cox, 20 Belford St., Ballarat East, 3350.
VK3ZMU—J. H. Reynolds, 4 Balmoral Ave., Kew, 3101.
VK3ZQG—M. J. Hayes, 68 Kerferd St., East Malvern, 3145.
VK3ZQO—A. B. Bradley, 22 Langdon St., Portarlington, 3223.
VK3ZQW—J. L. Gras, 8 Stone St., East Brighton, 3187.
VK3ZQY—M. G. Hepner, 43 Bellarine St., Geelong, 3220.
VK3ZSW—G. D. Weymouth, 11 Kirkwood St., Eaglehawk, 3556.
VK3ZTP—P. J. Fitzherbert, 8 Studley Ave., Kew, 3101.
VK3ZUN—B. S. W. Churchill, Flat 8, 3 Barnsby Rd., South Yarra, 3141.
VK3ZVQ—D. A. Evans, 6 Vila Crt., Oakleigh, 3166.
VK3ZXU—D. K. Freeman, 64 Vicki St., Forest Hill, 3131.
VK3ZYU—R. J. H. Clarke, 23 Glen Dr., Eaglemont, 3084.
VK3ZZF P. L. Bell, 11 Berkeley St., Hawthorn, 3122.
VK3ZZI—G. J. Greenwood, 9 Grundy Gr., Pascoe Vale South, 3044.
VK3ZZJ—E. Westerman, Flat 7, 18 Sydney St., Murrumbeena, 3163.
VK3ZZQ—T. P. Mitchell, 4 Grant St., Newtown, 3220.
VK3ZZY—J F. Fitzwater, 49 Claremont Ave., Malvern, 3144.

VK4RT—R. H. Coat, 14 Jellicoe St., Coorparoo, 4151.
VK4UA—D. R. Clark, 182 Hornibrook Esp., Clontarf, 4019.
VK4ZET—E. T. Norris, 210 Hume St., Toowoomba, 4350.
VK4ZNP—N. N. Potts, 19 Mayrene St., Carina, 4152.
VK4ZRW—R. A. Wilson, 46 Atherton St., Edge Hill, 4870.
VK4ZTA—G. T. Adamson, 3 Maker St., Toowoomba, 4350.
VK4ZVN—V. G. Novotny, 78 Dorrigo St., Kedron, 4031.

VK5DV—N. K. Kohler, 15 Jury Ave., Rostrevor, 5073.
VK5HU—K. L. Gillion (Dr.), 7 Ella St., Parkside, 5063.
VK5NO—L. H. Vale, 29 Calton Rd., Gawler, 5118.
VK5TP—T. Roberts, 10 West Beach Rd., West Beach, 5024.
VK5ZAY—K. R. Bone, 23 Mackay Ave., Plympton, 5038.
VK5ZGI—G. J. Thomas, 4 Stashr St., Nuriootpa, 5355.
VK5ZGN—D. L. Park, 1 Rosedale Ave., Morphettville, 5043.

VK6AQ—G R. Crews, Naval Communications Station, Exmouth, 6707.
VK6JA—B. J. Arbon, Stone St., Borden, 6338.
VK6TT—W. T. Taylor, 67 Central Rd., Rossmoyne, 6155.
VK6ZBW—R. S. Savill, 65 Action Ave., Rivervale, 6103.
VK6ZBZ—B. Weir-Smith, 24 Knox Cres., Melville, 6156.
VK6ZDQ—M. E. Zils, 187 Campbell St., Belmont, 6104.
VK6ZEB—L. N. Brooks, 35 Shaftsbury Ave., Bedford, 6052.
VK6ZEH—H. E. Christensen, 65 Federation St., Mt. Hawthorn, 6016.
VK6ZLT—L. F. Toussaint, 10 Errinbea St., Riverton, 6155.

VK7GH—G. L. Hall, 54 Clare St., New Town, 7008.
VK7KK/T—R. K. Emmett, 6 Haig St., Lenah Valley, 7008.
VK7ZLC—L. C. Dean, 47 O'Brien St., Glenorchy, 7010.

VK9HR—R. Hester, Station: Tanga St., Kavieng, N.G.; Postal: C/o. Electricity Commission, Kavieng, N.G.
VK9JS—J. B. Stacy, Ukarumpa, E.H.D., N.G.
VK9UC—Ukarumpa Radio Club, Station: Ukarumpa, N.G.; Postal: P.O. Ukarumpa, E.H.D., N.G.

CANCELLATIONS

VK2GF/T—D. A. Page. Transferred to Vic.
VK2ADV—C. Mc. Hicks, Not Renewed.
VK2BCI—G. Kempton. Not Renewed.
VK2BCW—C. H. Wall. Transferred to N.T.
VK2BJS—J. B. Stacy. Now VK9JS.
VK2ZJG/T—J. Gray. Now VK2BGJ/T.
VK2ZLD—L. W. Doolan. Not Renewed.
VK2ZPQ—J. A. Gardner. Now VK1ZOO.
VK3HY—H. L. Andrews. Deceased.
VK3ADK—D. A. Connelly. Deceased.
VK3AEJ—G. W Brain. Transferred to Willis Island.
VK3AJL—J. F. Long. Deceased.
VK3ZEP—P. N Engelman. Now VK3QW
VK3ZGY—J Monro. Not Renewed.
VK3ZJB—B. H Baker. Now VK3HB.
VK3ZJV—J H. Van Den Brenk. Not Renewed.
VK3ZNC—D. R. St. John. Now VK3AQR.
VK3ZNZ—M. R. Trickett. Now VK3ASQ.
VK3ZOL—M. G. Foster. Transferred to Qld.
VK3ZPS—D. R. Blackman (Dr.). Now VK3TX.
VK3ZVV—R. J. Halligan. Now VK3AOT/T.
VK3ZYF—G. H. Gaspars. Now VK3AAU.
VK4CU—E. J Coan. Returned U.S.A.
VK4ZCO—R. H. Coat. Now VK4RT
VK4ZHB—F. H Birkbeck. Transferred to Vic.
VK5JR—B. A. Endersbee. Transferred to Vic.
VK6ZEL—B. J. Arbon. Now VK6JA.
VK6ZFV—D. V. Pryce. Ceased Operation.
VK7ZAO/T—R K. Emmett. Now VK7KK/T.
VK8NO—L. H Vale. Now VK5NO.
VK9GC—A. Sandilands. Now VK7GC.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK5MS	317/338	VK5AB	300/314
VK3AHO	314/326	VK4FJ	284/301
VK6RU	307/330	VK4TY	277/276
VK6MK	304/321	VK3TL	271/276
VK2JZ	303/316	VK3APK	266/267
VK4HR	303/316	VK3AAK	263/267

New Members:

Cert. No.	Call	Total
85	VK5BB	116/119
86	VK4MY	172/172
87	VK4UC	106/106

Amendments:

VK4KS	257/271	VK4PY	168/153
VK3ZE	190/193	VK3AMK	137/137
VK3SM	151/164	VK3AGH	110/120

C.W.

VK2QL	302/333	VK3ARX	267/276
VK3AHO	294/306	VK3NC	266/286
VK3CX	291/313	VK3YL	265/283
VK4FJ	291/313	VK6RU	264/285
VK2AGH	282/296	VK3XB	263/276
VK4HR	274/296	VK3APK	261/288

New Member:

Cert. No.	Call	Total
83	VK4MY	111/111

Amendments:

VK4TY	255/286	VK3KS	219/226
VK4UC	253/253	VK3AX	164/162
VK3RJ	242/255	VK4KS	131/136

OPEN

VK2AGH	311/329	VK4FJ	296/320
VK4HR	309/331	VK3EO	293/314
VK6RU	309/322	VK3ARX	290/298
VK2VN	306/321	VK3TL	287/291
VK6MK	305/323	VK3APK	284/299
VK4TY	302/315	VK3ACX	276/300

New Members:

Cert. No.	Call	Total
108	VK3ACS	97/101
109	VK1QL	101/101
110	VK4MY	199/199
111	VK3XB	276/287
112	VK4UC	203/203

Amendment:

VK4KS 267/284

W.I.A. H.A.-VK-C.A. AWARD (S.W.L.)

Listed below are details relating to those Overseas Short Wave Listeners to whom this Certificate has been awarded.

Cert. No.	Call	Date Awarded
1	SM0-3068	9/11/66
2	UA0-29108	21/11/66
3	UA9-8849	11/2/67
4	W2-6883	27/2/67

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

MORSE PROFICIENCY

Editor "A.R.," Dear Sir,

I refer to the article by Alan Shawsmith, VK4SS, in "A.R." for June, dealing with Morse proficiency.

The following are a couple of points which might further aid learners —

Firstly, do not try to spend too much time at it at once.

In the course of his training of R.A.A.F. recruits during the war, the late Merv Brown, VK5MB, found that at the end of half an hour his class could absorb no more and the balance of an hour's lesson was not productive. He evolved the idea of seven minutes Morse and a three-minute break. This was filled in with music, to change the train of thought perhaps. Suffice it to say that "authority frowned" until Merv. was able to show that by giving six periods of 7 minutes each, to equal 42 minutes, he was doing more good with the trainees than under the old method. It was then approved. My authority for this was Merv. himself, about 1951.

Secondly, when you start sending (and this is not recommended until you can recognise sounds as characters at about 10 w.p.m.) keep the bar of the key and forearm in a straight line. This avoids wrist strain and, having had it impressed on me in my youth, I find that my wrist is still okay after 50 years of it. It is all wrist work in my book.

I think it advisable that a learner should be fully aware of what good signals sound like before he attempts to make any; otherwise how will he know what to try and make.

Experience also shows that a good Morse operator is less likely to make phonetic errors when using telephony, but, despite comments otherwise, taking messages by telephony is slower than by Morse, given reasonably good operators.

—T. Laidler, VK5TL.

QSLs FOR WOQJN/MM

Editor "A.R.," Dear Sir,

For the past several months I have been trying to get a message across to VK Amateurs and therefore trust you can find space to publish this letter.

For several years I have been a very close friend and shipmate of James Quirk, WOQJN/MM who was the radio officer on the S.S. African Star, and I was with him as Chief Officer and more or less the second Amateur operator. In the year and a half that the African Star was on the U.S. to Australia run, Jim made a lot of friends and I had the pleasure of meeting many of them also.

On 16th March, 1968, at 4 a.m., the African Star was proceeding down the Mississippi River on her way to Australia, and was involved in a collision with an oil barge. As fate would have it, I happened to be on my annual vacation. Jim and 21 other crew members were lost or missing, and 20 crew members hospitalised. Just about three months after the collision, Jim's body was found. I am pleased to say there were several of his Amateur friends able to attend his funeral, but I was on my way to Australia and therefore unable to be present. I have pledged myself that in deep respect to Jim and other shipmates lost in this collision, every time I am on a ship passing the spot where the collision happened, the American flag on the stern of my ship will be lowered half mast.

Jim had not been an Amateur very long, only about a year, and through the good graces of Jim VK4MW had some QSL cards made up, showing the S.S. African Star on her way out of New York Harbour.

At the time of Jim's death there was close to $5,000 worth of Amateur and electronic gear, and his log book, on board. It is now my understanding that this gear and log book have fallen into the wrong hands, and we may never see the log book again.

If any VK Amateur will write to me, giving the date that he worked Jim, I can refer to my personal records and will be able to tell if the African Star was at sea on that date. At the present time that is the only way I have to verify a QSO with Jim, and I will be glad to send a QSL card of Jim's. However, I must warn them that it may be a matter of some months before they get a card as I will not be returning to the States to my QTH until the end of September, and I am liable to leave the States again at any time. One other method of verification is if they can show where they were in QSO with Jim and Newt. W1BCR and Ralph K0YTM.

My home QTH is: Box 87, Upper Fairmount, Maryland 21867, U.S.A.

—Charlie Carroll, WN8KKG/MM.

TEMPORARY EMPLOYMENT IN NEW GUINEA

38A Alma Road,
Camberwell, Vic., 3124.
Telephone 82-4774.

Editor "A.R.," Dear Sir,

A limited number of vacancies exist for temporary employment as Radio Technicians with the Posts and Telegraphs, Papua and New Guinea.

They should be qualified to take charge of a radio telephone station containing both h.f. and v.h.f. communication equipment.

Most of these stations are staffed by only one technician who is responsible for maintaining the services in operation as required.

Trunk and telegraph services are provided by a h.f. network but there are a few v.h.f. systems providing junction routes and exclusive subscriber services. The out-station network consists of a base station with h.f. transmitter and receiver while the out-stations operate on low powered transceivers.

The out-stations are grouped into zones.

The Department also maintains broadcasting facilities for the Department of Information and Extension Services.

These small studio installations generally consist of communication transmitters used after hours for broadcasting services.

I am a retired P.M.G. engineer and have been requested to contact suitable technicians who would be prepared to spend a year or two in the Territories.

Applications from technical personnel from areas such as the private radio industry or the services would be considered.

Qualifications are completion of an approved course of training in radio telecommunications.

Pay will be at the rate of $3,009-$3,696 per annum. Salaries quoted are for single men and include allowances. Married men receive an additional allowance of $360 per annum. Income tax is at present about half that payable in Australia.

The period of employment preferred is for a two-year term. Successful applicants would work for 21 months then would be entitled to three months' leave pay and return air ticket.

I would be pleased to hear from those interested so that we could discuss details including accommodation and local conditions.

—G. A. Wiffen.

Youth Radio Clubs Scheme of Australia

The first National Conference of the Youth Radio Clubs Scheme of Australia was held in Melbourne on Saturday, 1st June, 1968, at the rooms of the Victorian Division of the Wireless Institute of Australia.

A great deal of preliminary work had gone into the organisation of the Conference by the Youth Radio Clubs Scheme of Australia, Victorian Division, and the result was an outstandingly successful conference.

Visiting delegates were treated with generous hospitality and provided with a most interesting time from the moment they arrived until they regretfully left for their home States.

The purpose of the Conference was to organise the State groups on a national basis, to ensure uniformity of syllabuses, certificates and examinations throughout the VK call area.

The representatives were:

Mr. J. Battrick, W.I.A. Federal President.
Mr. R. Black, Past Federal Supervisor.
Mr. R. Emmett, State Supervisor of Tas.
Mr. J. Flynn, Sec. of N.S.W. Division.
Mr. R. Guthberlet, State Supervisor of S.A.
Mr. D. Jeanes, State Supervisor of N.S.W.
Mr. M. Plummer, State Supervisor of Vic.
Mr. D. Reid, Editor of "Zero Beat".
Mr. H. Rider, Past State Supervisor of Vic.
Mr. R. Smith, Exam. Officer for Vic.
Mr. W. Tremawen, Supervisor of the Correspondence Section.
Mr. J. Webster, Federal Co-ordinator to the W.I.A.

Apologies were received from both Queensland and Western Australian Divisions.

The meeting was opened at 14.22 hours with Mr. K. Pincott, W.I.A. representative, as chairman. State Supervisors had voting rights, the remaining members present acting in an advisory capacity in their own special departments.

Mr. Pincott welcomed all delegates to the conference on behalf of the W.I.A. and expressed the wish that most of the apparent differences existing between the various State groups would become settled to the complete satisfaction of all concerned.

Mr. Jeanes spoke of the N.S.W. Committee, regretting that all the committee members could not be present but would be eagerly looking forward to their delegate's reports. He expressed the opinion that the Conference would definitely achieve an important but unwritten object—that of understanding the views and problems of other Divisions.

Mr. Plummer explained how the agenda had been drawn up and how all Divisions had been approached for their views regarding the items to be included on that agenda.

The business of the Conference then began with a lively discussion of the present position of the Youth Radio Scheme. The Scheme had begun quietly some years before as a means of providing inducements in the form of certificates, for members of Radio Clubs in Schools and other youth organisations.

The Scheme was adopted by the Wireless Institute of Australia as part of its educational activities. By now, it had grown into a rather large, if sometimes clumsy youth group, and it was felt that it might take a greater responsibility for its own affairs as an organisation affiliated with the W.I.A.

A motion moved by VK3 and seconded by VK2 that "the name of the organisation be the Youth Radio Clubs Scheme of Australia" was carried unanimously. With this motion, the Youth Radio Clubs Scheme of Australia was formed as a nationwide Scheme.

Some fifteen motions were passed during the rest of the Conference, all designed to place the new organisation on a sound basis. Briefly, they provided for the drafting of a constitution for the Youth Radio Clubs Scheme of Australia, the appointment of a Federal Co-ordinator, the formation and administration of a Correspondence Section, the formation of a Syllabus, Standards Committee, acceptance of syllabuses at present in use by the Victorian Division, recognition of "Zero Beat" as the official publication of the Youth Radio Scheme of Australia, that the notes for the Elementary, Junior and Intermediate Certificates be printed and distributed by the Victorian Division, and that a Federal Convention be held during 1969.

Included was a motion to create Mr. Rex Black a Life Member of the Youth Radio Clubs Scheme of Australia in recognition of his services to Y.R.S.

All motions were carried unanimously.

The Conference closed at 0012 hours on Sunday morning and later the same morning, much later, resumed at the home of Mr. Michael Plummer to prepare groundwork for the draft Constitution.

Do these changes affect the members of a Radio Club which is a member of the Scheme? No. The Syllabus Committee will make minor alterations in the present syllabuses. The Federal President of the W.I.A., Mr. J. Battrick, stated that the Institute would at all times continue to assist the Youth Radio Clubs Scheme of Australia by supplying certificates, meeting facilities, etc. The State Supervisor is the person in each State who will do the main job of organising as previously and a committee may be appointed to help him in the larger States.

Those who attended the Conference came away satisfied that the Youth Radio Clubs Scheme of Australia was at the start of a new and important phase.

FEDERAL

On the 31st July the Federal Vice-President finalised a series of discussions with Mr. C. Carroll, Controller Radio Branch. The points raised and resolved were as follows:

USE OF ENGLISH IN RELATION TO CALL SIGNS

The Post Office has requested that stations in the Amateur Service announce call signs in the English language. No objection is made to the announcement of call signs in a foreign language, so long as the announcement is also made in the English language. The appropriate amendment will be made to the Handbook, and the Institute is asked to give early publicity to this request.

V.H.F. REPEATER/TRANSLATORS

Agreement has been reached with the Department in relation to Repeater/Translators as follows

(i) The Department will approve the use of repeater/translators in v.h.f. Amateur bands either on an experimental basis or on a permanent unattended installation basis.

(ii) Such repeater or translator may either re-transmit within the same band or to another band. It is anticipated that such equipment will not be operated on frequencies below 144 Mc., though consideration may be given to their use in the 6 metre Amateur band.

(iii) Any application (to be made to the Superintendent Radio in the State concerned) will be considered on its merits and the Department will have regard to the following points:

(1) The number of translators permitted will be restricted to avoid undue interference in Amateur bands.

(2) The Department will require to be satisfied that the design and construction of the particular equipment in respect of which permission to operate is sought is of a satisfactory technical standard though reasonable allowance will be made for experimental devices.

(3) The following additional technical points should be noted—

(a) The equipment should include arrangements for "fail safe" operation, i.e. failure of any component will not cause the transmitter to lock on.

(b) The equipment shall be adequately and regularly maintained. A record shall be kept of all essential meter readings obtained during each maintenance visit, the repairs, adjustments and other maintenance undertaken and the purpose of operation (i.e. the times of switching on and switching off the translator).

(c) Any form of modulation appropriate to the band in use may be employed. Where system design requirements apply, means should be provided to avoid modulation in excess of allowable limits as a function of received signal strength.

(d) No transmission shall take place in the absence of a received carrier, or if so desired, voice or other modulation intended to convey intelligence.

(iv) The Department will have to be satisfied that a permanent installation is desired by a reasonable number of Amateurs in the area concerned.

(v) Net frequencies or other normally frequented band areas shall be avoided for both input and output channels of repeaters/translators except where there is general agreement among Amateurs regarding such usage.

(vi) The Department will have to be satisfied that the equipment is safe from unauthorised operation and can be quickly turned off in case of malfunction.

(vii) The site chosen must be acceptable to the Department. Transmit and receive frequencies shall be as approved by the Department. As the Amateur Service is the secondary service in bands above 144 Mc, some restriction may be necessary in regard to the use of specific channels in these bands.

(viii) Permission to use such equipment will be granted on a basis somewhat similar to the licensing of a radio club—namely, one individual Amateur will be nominated as being responsible for the operation of the equipment.

(ix) To avoid the need for repeaters/translators to be fitted with equipment for identification purposes, stations communicating through them should include in their calling procedure an indication that they are operating through a particular repeater/translator

It is anticipated that all State Superintendents Radio will be aware of these arrangements by 5th August. As the implementation of these arrangements may bring to light difficulties that have been overlooked, delays may occur

The Department suggests that, wherever appropriate, the local W.I.A. organisation should co-ordinate applications. It is suggested that persons seeking the use of these facilities should not hesitate to make personal contact with the appropriate officer in their State, to ensure the fullest possible mutual co-operation.

Y.R.C.S. AND W.I.A.

Executive discussed at its recent meeting a letter from the VK2 Division requesting that F.E. take action to implement W.I.A. policy on the matter of the Youth Radio Scheme. Executive also examined in detail the minutes of a Y.R.C.S. Convention recently held in Melbourne, attended by Youth Radio Scheme Supervisors from VK1, VK3, VK5 and VK7. The presence of Mr. Pincott at that F.E. meeting was fortuitous, as the Chairman was able to ask some questions about this convention. Ken stated that visiting delegates from N.S.W. had complimented him on his chairmanship of the Y.R.C.S. Convention, and the impartiality shown to all delegates. Both he and Federal President VK3OR stated that they had conveyed the substance of the Institute's policy that the name of the organisation be the "W.I.A. Y.R.C.S." to the Convention. However, this was not the wish of the people concerned with conducting the Y.R.C.S., who wanted the Scheme called the "Youth Radio Clubs Scheme of Australia".

Following the discussion of VK3's letter and the Y.R.C.S. minutes, F.E. carried the following resolution:

"That F.E., having perused minutes of the Y.R.C.S. Convention, notes with interest that every motion was passed unanimously without dissent on any point recorded, even though Messrs. Rex Black, D. Jeanes and J. Flynn, from N.S.W., were present. F.E. has been informed that Institute policy was drawn to the attention of all those present at the Y.R.C.S. Convention. F.E. can see neither the need, nor the opportunity to take any action in regard to the matter."

INTRUDER WATCH

Federal I.W. Co-ordinator, David Wardlaw, VK3ADW, informs us that in addition to the State I.W. Co-ordinators mentioned in the last Federal Information Bulletin, the VK8 Division has appointed a Co-ordinator. The complete list to date is as follows:

N.S.W.—VK2BPZ, W. H. R. Treloar, 286 Fullerton St., Woollahra.
Vic.—VK3ANG, M. P. Davis, 144 Tramway [illegible].
Tas.—VK7DK, D. H. Kelly, 90 Upper Brougham Street, Launceston.
W.A.—George Allen, 283 Amelia Street, Balga.

— . . . —

FEDERAL QSL BUREAU

The L.P.R.A. (Panama Republic) advises of an expedition to Colbita Island (Lat. 7°N, x 81°W) between September 9 and 14. All bands c.w./s.s.b. will be employed and the station will sign HP0A. It will count as Panama for DXCC but is a new prefix for WPX. QSLs via HP1AC, Box 9A-737 Panama 9A, Panama.

Pierre Gaithier, SWL, REF13608, advises that despite the inclusion of I.R.C. with his reports, the following VK stations have not replied: VK3UQ, VK6RU, VK4NN and VK5JW.

Despite several notifications, the UA people still will not observe the VK QSL Bureau set-up. They have now been informed (in Russian) that any despatches made after 1st August (other than for VK2, 3, 8) will not be handled by this Bureau.

—Ray Jones, VK3RJ, Manager.

HAMADS

Minimum $1 for forty words.
Extra words, 3 cents each.

HAMADS WILL NOT BE PUBLISHED UNLESS ACCOMPANIED BY REMITTANCE

Advertisements under this heading will be accepted only from Amateurs and S.w.l's. The Publishers reserve the right to reject any advertising which, in their opinion, is of a commercial nature. Copy must be received at P.O. Box 36, East Melbourne, Vic., 3002, by 5th of the month and remittance must accompany the advertisement.

COLLINS 75S2, 32S1, 312B-4 Control Unit, SM1 Mic., and Power Supply; condition, indistinguishable from new. Price $1200 (approx $1000 under list), or exchange with cash adjustment, for Galaxy V or similar. VK3AOK, 28 Orange St., South Oakleigh, Vic. Phone 57-1107 (Melb.)

COSSAR Double-Beam 5 Inch Oscillograph with Cossar Model 343 Channel Oscillator Electronic Switch, $75. Hallicrafter HA-14 2 metre Transverter new $175. Hy-Gain 14AVQ, $30. Linear Amplifier with Jennings vacuum tuning condenser, self-contained power supply, $175. VK2EX, Alex Outtrim, 30 Boomerang Rd., Springwood, N.S.W. Tel 51-1528

FL-1000 5-band SSB Transmitter; u.s.b., l.s.b. selectable, with P/B microphone and spare 6DQ6; in perfect condition, $320, or $450 including 40 ft. t.v. tower and 3 element 20m. beam. Collins 455 Kc Mechanical Filter $22. 2C4 a.p.s.n., 90 300v 300 mA., 500v 270 mA., 6.3v. 8a., 6a., 5a. supply in perforated cabinet $15. VK3ACB, 1981 Malvern Rd 3144. Phone 20-1405

FOR SALE Ex C.F.A. 40 ft. Fire Tower with ladder, ready for removal, best offer. R. Flanagan, L3158, 31 Valetta St., Carrum, Vic. Ph. 772-4035 evenings

FOR SALE Galaxy 3/300 Transceiver, complete with a.c. supply, ext. v.f.o., and microphone, excellent order, new p.a. tubes fitted 80-40-20 metre bands, s.s.b. or c.w., $300. Topaz Mobile Supply available extra cost. VK2APP, Stoneridge, Monkeagle N.S.W. 2582.

FOR SALE: Hallicrafter SX-100 general coverage receiver, a.m., c.w., selectable sideband, 14-tube dual conversion super het. tuner from 538 to 1580 Kc. and 1.72 to 34 Mc. Calibrated bandspread 90.5 Kc. second i.f. adjustable filter notch and rejection tuning, audio filter 500 cycle to 5 Kc., in-built 100 Kc. crystal calibration and noise limiter. Supply 105 to 125 volt 50/60 cycle or external d.c. power supply or batteries. Versatile receiver in very good condition, $200. Alec Swinton, VK2AAK, Kulnura N.S.W.

FOR SALE: Heathkit Model HO-13 Ham Scan Panoramic Adaptor, provides visual display of signal amplitude versus frequency, 30 Kc. to 100 Kc., centered on the receiver i.f. Useful for satellite observation. $100. Alex Swinton VK2AAK, Kulnura N.S.W.

FOR SALE: Heathkit SB10 Sideband Adaptor, $45 or reasonable offer. Trutmann, VK3HV, Phone Geelong 79111 [bus.].

FOR SALE 20 and 40 metre Translator Converters, printed circuit, with xtals, used with VK3APC Rx, $14 each. Wanted Circuit for MR10C, M. Batt, Rokewood Junction Post Office, Vic., 3351

SELL Geloso 222 Transmitter, 80-10 mx, original condition, manual, new spare tubes. Had from new as heard from 3KV. $125. Or will trade for sidebander. 8/72 Holyrood St. Hampton, Vic., 3188. Ph. 98-7804, bus. hrs. 98-0277

SELL Heathkit 'Mohawk" Receiver, 160-10 metres, 100 Kc. calibrator. Matching "Apache" Transmitter, 80-10 metres, v.f.o. controlled, 150 watts a.m. and c.w., s.s.b. with external adaptor. 110 volt transformer. Handbooks $280 o.n.o. the lot. Excellent condition. K. Hoffmann, 10 Druce St., Toowoomba, Qld. VK4KH

TX APACHE, SB10 Adaptor, $175. HW32 s.s.b. Transceiver [1 band, 20m.] 3-band conversion kit, 1 xtal missing, $100. Pwr. supply for Transceiver, $35. Monitor Scope, $75. VK3OD, 2 Claring Bould Rd. Christies Beach S.A.

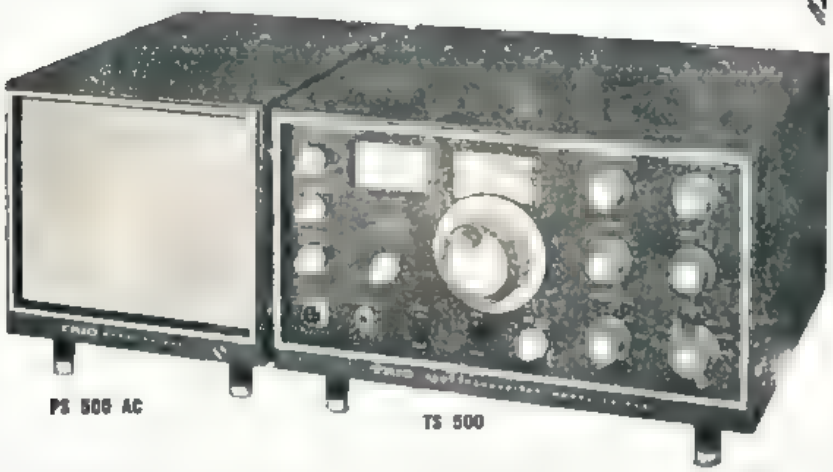
WILL Exchange for a Webster Bandspanner complete with bumper bar mounting, a two element 20 metre Beam, rotor and indicator. Wm. F. Sievers VK3CB, 132 Orrong Rd., Toorak, Vic., 3142. Phone 24-4154

WANTED SX117, FR100B, SR700A, SX100. Particulars to P. Rodukoff, 21 Derby St. Hawthorne, Qld., 4171. Phone 95-4765. Sell AR7, SX28, HE30.

TRIO

SSB transceiver

200 watts PEP—7 Bands—A M & C W and Power Supply and Speaker Unit



SPECIFICATIONS:

Frequency:

80m Band	3.5-4.0 MHz
40m Band	7.0-7.5 MHz
20m Band	14.0-14.6 MHz
15m Band	21.0-21.6 MHz
10m A Band	28.0-28.6 MHz
10m B Band	28.5-29.1 MHz
10m C Band	29.1-29.7 MHz

Communication Method: SSB (A3J), AM (A 3H), CW (A1)

Maximum Input Power: (Xmitter final stage) 200W (PEP)

Standard Input Power: (Xmitter final stage) 160W (PEP) 120W on 28 MHz band only

Antenna Input Impedance: 50-75 ohm

Carrier Suppression Ratio: More than 40 dB

Single Side Band Ratio: More than 40 dB

Mic. Input Impedance: High impedance (dynamic or crystal mic. recommended)

Xmitter Audio Frequency Characteristics: 300-3,000 Hz (-6 dB)

Receiver Sensitivity: 1μV S/N 10 dB (14 MHz)

Receiver Selectivity: 2.7 kHz (-6 dB) 5.0 kHz (-55 dB)

Spurious Rejection Ratio: More than 45 dB

Image Ratio: More than 60 dB

Undistorted Power Output: More than 1W

Receiver Output Impedance: SP 500 ohm PHONE 8 ohm

Power Consumption (using PS-500AC): 450W (At maximum power output) 250W (Receiving Mode)

Tubes and Transistors used: 17 TUBES, 3 TRANSISTORS, 15 DIODES

Dimensions: W: 13⅜"; H: 8¼"; D: 11¼"

Weight: 17.6 lb

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